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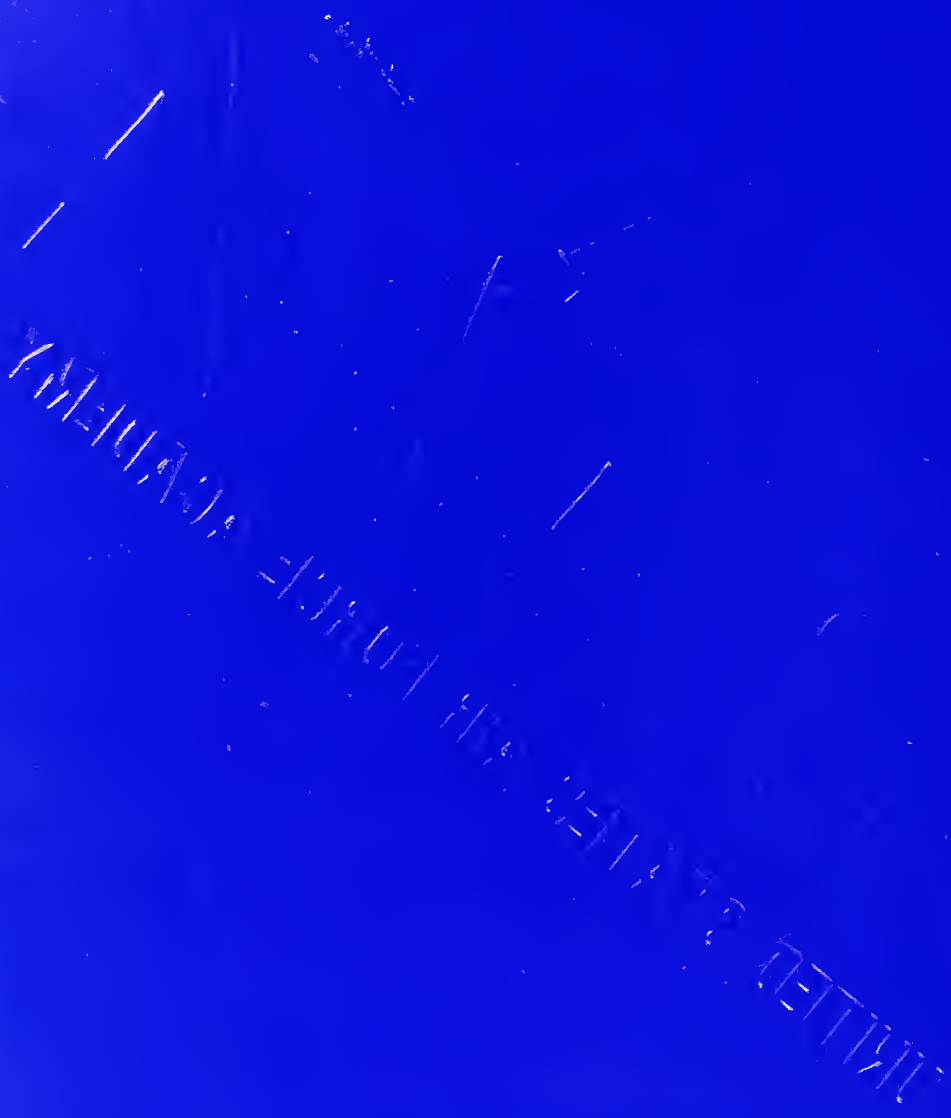
MISSION



The mission of the Air Force Academy is to provide instruction and experience to all cadets so that they graduate with the knowledge and character essential to leadership and the motivation to become career officers in the United States Air Force.

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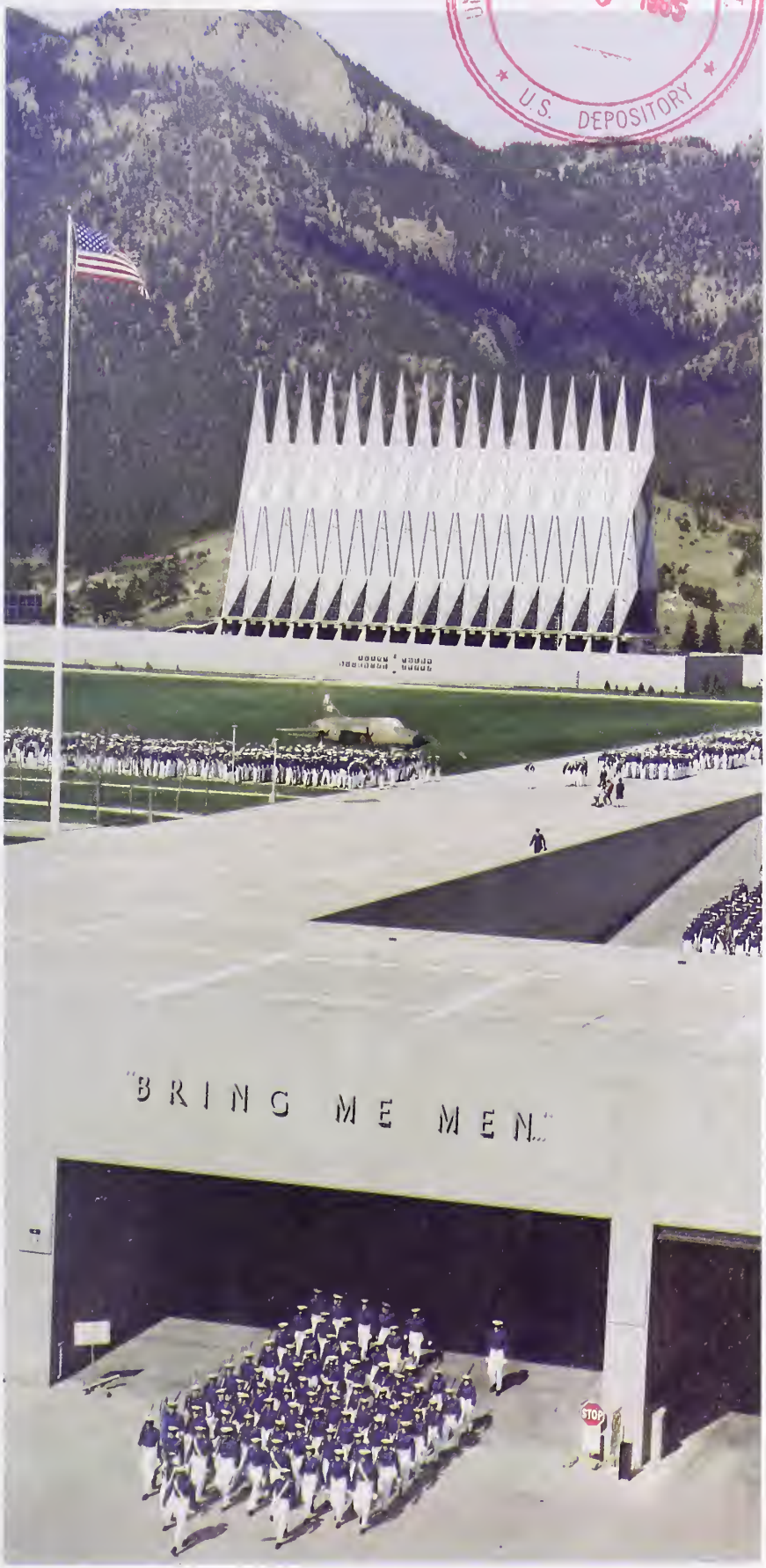

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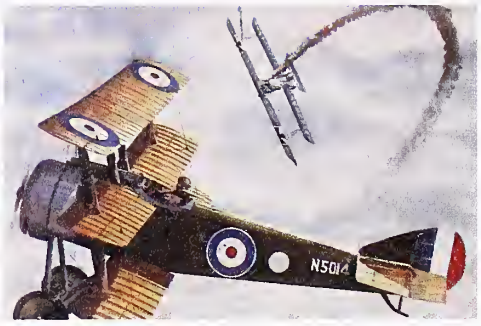


Sopwith Triplane.

USAFA

B-52 Display.

Capp's Cabin, the oldest building on the Academy grounds.

"If you don't make history, you are history."
--Will Rogers

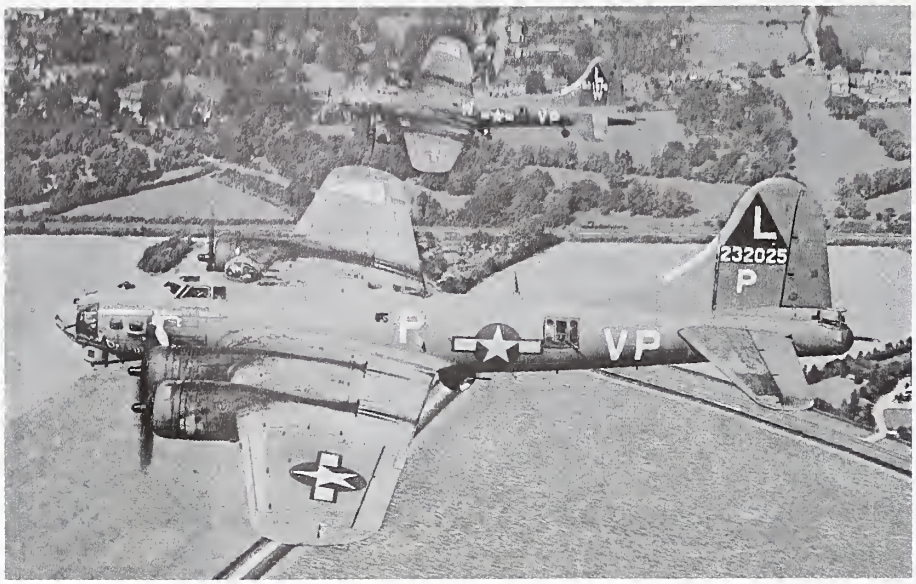
An experimental space shuttle, the SV5J.

American military aerospace power has grown tremendously during our century. An Air Force Academy education fuses this great aviation heritage to the leading edge of space-age technology.

The aviation pioneers of World War I prepared the way for the decisive role played in World War II by both tactical and strategic airpower. During the second war, our nation's leaders realized the growing importance of airpower to free-world defense and, in 1947, Congress established the United States Air Force as an independent branch of service. From the earliest days of the jet age to today's advanced technology, the Air Force has been an aviation leader. The planned acquisition of space shuttles in the next few years will ensure that the Air Force continues to be in the forefront of aviation technology.

Very early the Air Force saw the need for an academy specifically designed to educate a nucleus of career officers for the new service. On April 1, 1954, Congress authorized establishment of the Air Force Academy and President Dwight D. Eisenhower signed the legislation. The Secretary of the Air Force appointed a site selection committee, composed of prominent civilian and military leaders, to examine sites throughout the country to find an appropriate spot for the new academy.

Parade at the Lowry temporary site.

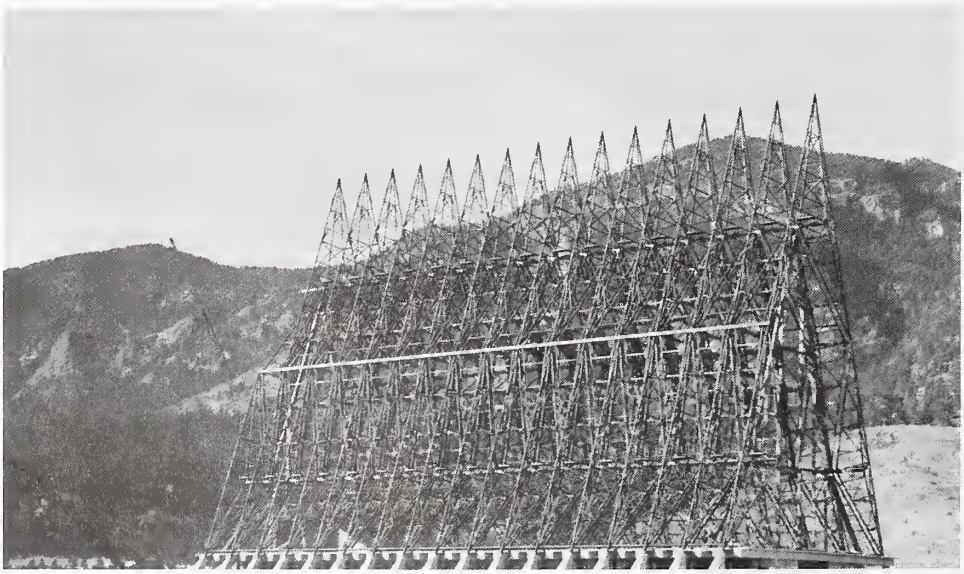


Two "Confederate Air Force" B-17 Liberator bombers.

"The loftiest goals or the most urgent objectives in any of our plans or programs will remain unfulfilled until understood and accepted by our people." --Verne Orr, Secretary of the Air Force

First on horseback, then by air with committee member Charles A. Lindbergh at the controls, the selection committee explored the large expanse of land just north of Colorado Springs. The area located along the Rampart Range of the Rocky Mountains with Pikes Peak towering in the background impressed the committee and, after screening numerous locations and visiting proposed sites in many states, they agreed on the Colorado site. Pending construction of the Academy at the permanent site, a temporary location at Lowry Air Force Base in Denver was prepared to accept the first class. On July 11, 1955, the first class of 306 cadets was sworn in and the Academy was dedicated.

The President appointed Lieutenant General Hubert R. Harmon as the first Superintendent of the Academy. Under General Harmon's direction, the Academy staff designed a balanced program of leadership, academics, and athletics.



The Academy's "16"-spire Cadet Chapel.

While a cadet way of life, a tradition, and a curriculum were being formed at Lowry, work got underway in the fall of 1955 at the site north of Colorado Springs. On August 29, 1958, cadets began to move into the newly constructed Academy. On June 3, 1959, the Academy commissioned its first officers.

Since the first class graduated, the Cadet Wing has grown to more than 4,000 cadets. Part of this expansion included the addition of women to the Cadet Wing. President Gerald R. Ford signed the legislation authorizing this addition on October 7, 1975, and the first class of women graduated in 1980.

Although the youngest of the service academies, many Air Force Academy graduates have made significant contributions to the defense of freedom and leadership of our country. During the Vietnam war, more than 70% of the graduates from the classes of 1959 to 1970 served in Southeast Asia.

In addition to the increasing numbers of general officer graduates, many have earned military honors. Captain Lance Sijan, Class of 1965, received the Medal of Honor posthumously for his action in Southeast Asia, and one of the two cadet dormitories is named for him. Fifteen graduates have been presented the Air Force Cross. Two, Richard S. Ritchie, Class of 1964, and Jeffrey S. Feinstein, Class of 1968, were declared "aces" in Southeast Asia. Awards presented to graduates also include 147 Legion of Merit medals, 249 Silver Stars and 2,048 Distinguished Flying Crosses.

Another graduate, Karl W. Richter, Class of 1964, is recognized as the first Air Force Academy legendary hero for his actions in North Vietnam. The lounge in Arnold Hall is named for him.

Four graduates, Lt Colonel Lawrence E. Stellmon, Class of 1969; Captain Patrick J. Corrigan, Class of 1974; Captain David L. Commans, Class of 1975; and Captain Mark C. Masters, Class of 1975, currently fly with the Thunderbirds. They join several graduates who have flown with the Air Force's precision flight team.

Also contributing to the Air Force Academy's history and tradition are astronauts Karol J. Bobko, Class of 1959, Frederick D. Gregory, Class of 1964, Loren J. Shriver, Class of 1967, and Richard O. Covey, Class of 1968. Five others, John E. Blaha, Class of 1965; Roy D. Bridges, Jr., Class of 1965; Ronald J. Grabe, Class of 1966; Guy S. Gardner, Class of 1969, and Gary E. Payton, Class of 1971, have been chosen for the space shuttle program.

These and other Academy graduates continue to contribute to the heritage of aviation and maintain the U.S. Air Force as a powerful deterrent force. The Air Force Academy continually adapts its curriculum and philosophy to reflect the changing responsibilities of the peacekeeping forces of a major power in today's world.

The Academy's first runway.

PROFESSIONAL DEVELOPMENT

Eagle and Fledgling statue.

USAFA

Military training.

USAFA mascot.

The total Academy experience contributes to your professional development. The Academy Superintendent directs this effort, assisted by the Commandant of Cadets, the Dean of the Faculty, and the Director of Athletics. This chain of responsibility ties every Academy organization to the quality of our graduates and to their preparation for future leadership. The entire program is based on challenges--mental, ethical, and physical. These challenges develop superior officers committed to duty, honor, and service to our country. However, meeting these challenges requires dedication, sacrifice and stamina. If you enjoy responsibility and accept discipline, welcome new experiences and opportunities, and like to excel and lead others, you should have the attributes to become a successful cadet. If you find satisfaction in serving others through a sense of duty and morality, you should also have the assets to serve your country as an officer.

"Let anyone who quits striving for excellence move over for those who will not."
--Brig Gen Charles A. Lindbergh

The Academy's mission--to produce the best officers possible to lead tomorrow's Air Force--is accomplished through the three aspects of its program: military, academic, and athletic. These three aspects are the foundation of the Academy's leadership development program. Together they provide each cadet with the knowledge, skills, values, and behavior characteristics essential to become an Air Force officer.

Faculty members will assist you with your own professional development from admission to graduation. In turn, the military learning experience provided by your daily activities will enable you to lead and motivate those in your command at the Academy and throughout your Air Force career.

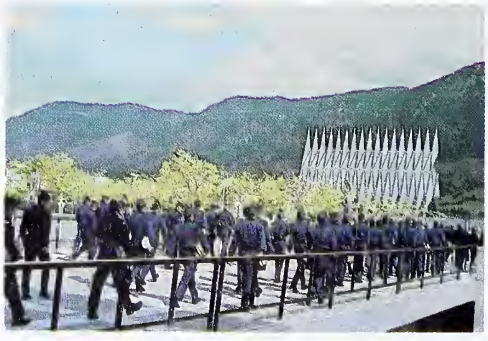
Color Guard .

When you complete the total Academy program, you will graduate with a bachelor of science degree and a commission in the Regular Air Force. Following graduation, a majority of the new officers enter Air Force pilot or navigator training. The Academy curriculum provides the background for flying, and professional development stimulates the motivation for flying training. Graduates who enter nonflying careers receive a solid foundation for leadership in those areas through the Academy curriculum and professional development.

CADET LIFE

Drum & Bugle Corps.

USAFA



In between classes.

Inside Fairchild Hall.

Although structured, the rules, regulations, and schedules of cadet life will help you organize your time and establish the self-discipline necessary to meet the challenges offered. The military environment, a vital ingredient in your training as a future Air Force officer and leader, permeates all aspects of your life at the Academy.

The following is a typical weekday schedule during the fall and spring semesters. Saturday mornings are often devoted to parades, inspections and study. Saturday afternoons and Sundays are usually free from duty.

Most academic classes are held in Fairchild Hall.

Cadet Schedule

During the academic year you will attend four 50-minute classes or study periods each morning, followed by the noon meal formation. There are three periods of classes or study each afternoon. Unless you are participating in intercollegiate athletics, you will play on a squadron intramural team two afternoons a week after classes. The other three afternoons after classes are unscheduled, and you may study or conduct personal business. You may volunteer for additional academic instruction conducted during the hour immediately following the end of classes or at any unscheduled time. After dinner you'll study in your room or in the library. You must be in your room and in bed at taps, unless you have special permission to study late.

Typical Daily Schedule

6:40	Breakfast Assembly
7:20	Breakfast
8:00-11:50	Military Training, Academic Classes or Individual Study Time
12:05	Lunch Assembly and Parade
12:20-12:45	Lunch
1:00- 3:50	Academic Classes or Individual Study Time
3:00- 6:30	Intercollegiate Practice
4:20- 6:20	Intramurals/Drill/Study
5:00- 7:15	Dinner
8:00-11:00	Study
11:00	Taps

1985-1986 Calendar

2 Jun 85	Sunday	Summer Term Begins
5 Jul 85	Friday	Class of 1989 Enters
9 Aug 85	Friday	Summer Term Ends
10-14 Aug 85	Saturday-Wednesday	Transition Period
15 Aug 85	Thursday	Fall Semester Classes Begin
30 Aug-2 Sep 85	Friday-Monday	Parents' Weekend
2 Sep 85	Monday	Holiday, Labor Day
28 Nov 85	Thursday	Thanksgiving
12 Dec 85	Thursday	Fall Semester Classes End
13-19 Dec 85	Friday-Thursday	Fall Semester Final Exams
20 Dec 85	Friday	Christmas Leave Begins
5 Jan 86	Sunday	Christmas Leave Ends
6 Jan 86	Monday	Spring Semester Classes Begin
20 Jan 86	Monday	Holiday, Martin Luther King's Birthday
21 Mar-30 Mar 86	Friday-Sunday	Spring Break Leave Period
9 May 86	Friday	Spring Semester Classes End
12-17 May 86	Monday-Saturday	Spring Semester Final Exams
21-22 May 86	Wednesday	Class of 1989 Recognition
26 May 86	Monday	Holiday, Memorial Day
28 May 86	Wednesday	Graduation Day

"To be good is noble, but to teach others how to be good is nobler and less trouble."
--Mark Twain

Leaves and Passes

During Basic Cadet Training (BCT), held during your first summer, you may not have visitors or leave the Academy. Following BCT, fourthclass (freshman) cadets are allowed visitors on Saturday afternoons and evenings and on Sunday mornings and afternoons. In addition, you also may leave the Academy and go into the local area several times a month. Occasionally, you are permitted to dine out in the homes of Academy personnel. Attendance at home football games and other selected Cadet Wing events is mandatory.

When you become an upperclass cadet (second through fourth years) you will be allowed more freedom which will be gradually increased by class. As a thirdclass (sophomore) cadet your free time will still be limited. However, except when military duties such as parades, training, inspections or football games are scheduled, firstclass (senior) cadets have every weekend free. When granted a Friday or Saturday pass, you must return to the dormitory by taps, which is 1:30 a.m. When you have a weekend pass, you normally will be allowed to remain away from the Academy following your last military duty Friday or Saturday until Sunday evening study time.

Individual cadets may receive more or fewer passes than their class quota, depending on individual achievement or deficiency. If your performance is not satisfactory in military training or academic studies, your free time may be restricted. If your work is above-average in all respects, your free time may be increased.

Most cadets go to Colorado Springs during off-duty time. As a fourth- and thirdclass cadet, you may not own an automobile, but may rent one if you desire. If you have a weekend pass, you are encouraged to use the bus transportation service to and from Colorado Springs. As a secondclass (junior) and firstclass cadet, you may own a car and keep it at the Academy.

With the exception of your entering summer, you will be granted approximately three weeks of leave each summer. You will have approximately two weeks of leave at Christmas and one week during the spring. Emergency leave may be granted to you if an emergency involves a member of your immediate family. Other requests for special leave are considered on an individual basis.

Counseling and Advising

The Air Force Academy counseling program helps cadets make the adjustment to their new lifestyle, and provides counseling for their professional development as officers. The following personnel and organizations make up this total counseling program:

Air Officers Commanding (AOCs) are responsible for the morale, welfare, motivation, training and discipline of the cadets in their squadrons. Each squadron has an AOC and an Associate AOC. They will assist you in adjusting to the cadet way of life and are the primary points of contact between your parents and the Academy. They will monitor your progress, motivation, and attitude. As members of the Commandant's staff, they supervise the discipline system within squadrons and act as mediators when decisions are required. A squadron faculty officer will counsel you in academic areas and assist you with problems of academic deficiency or probation. Any of these officers will be available whether you simply need someone to talk to, or whether you seek more complete consultation or guidance.

The Cadet Counseling Center closely parallels a typical college counseling service. You will have access to the counselors and to materials and facilities available at the center. Counselors will assist you in gaining maximum personal satisfaction from cadet life and attaining the highest degree of academic success in your courses.

Personnel in the Cadet Career Information Office will help you make timely and realistic selections of initial Air Force career fields. They'll also advise you of personnel programs and policies which may affect your career goals.

Firstclass cadets, serving as cadet officers, play a major role in guiding you. They provide much of the training and athletic supervision within each squadron and assist in tutoring.

A senior gets a management lesson.

"The more high technology around us, the more the need for the human touch."
--John Naisbitt

Curriculum and Scheduling Services personnel advise you on course selection and scheduling, academic majors, and scholarship opportunities. *Faculty instructors* are available to assist you in academic course work. They also help you select major academic fields and develop officer skills.

The Mental Health Clinic, under the Command Surgeon, offers complete psychiatric service.

Chaplains offer counseling in personal, moral, and spiritual matters.

Religious Activities

The spiritual aspect of the Academy is evident in all facets of cadet life, and it provides an extra dimension to traditional learning.

The Cadet Chapel serves as the center of religious activities for the Cadet Wing. It contains Protestant, Catholic and Jewish worship areas as well as an all-faith worship room.

"Don't worry too much. God cares for all of us, and at this altitude, we're all pretty close to Him."
--Cadet Maryanne Doean, Class of 1988

Participation in religious activities develops individual spiritual growth and leadership potential. Attendance at services is optional, but many cadets take advantage of the opportunity to grow spiritually. Cadets may attend church services in local communities when they are free from duty.

You may participate in any of the following activities: Sunday or Sabbath worship activities, daily morning and evening services, special denominational services and activities, cadet choirs, Bible classes, religious discussion groups, and weekend retreats. Many cadets volunteer to teach Sunday school classes in local religious education programs, and a large number of cadets participate in several cadet fellowship organizations.

Air Force chaplains who are regularly ordained clergymen conduct the religious services. In addition to the scheduled religious activities, the chaplains offer individual pastoral care and cadet counseling services. Guest ministers and lecturers are featured at the services periodically.

Medical Services

The Academy has excellent, convenient medical facilities. A cadet dispensary in Fairchild Hall gives outpatient treatment and physical examinations. The dental clinic in Sijan Hall provides routine dental care, and dental examinations. The hospital provides emergency dental care after duty hours. Physicians and specialists staff the fully equipped hospital. If you must be hospitalized, your academic studies usually will continue through a special program between the hospital and the faculty. If medically able, you will receive instruction either at your bedside or in a classroom in the hospital. Cadets may **not** refuse necessary medical treatment because of religious or personal beliefs.

Receiving medical care.

Legal Service

The Academy provides confidential advice and assistance to cadets on personal legal matters. If you have any legal problems or need help in preparation of legal documents, the professional legal staff at the Academy will be available to you. The staff includes all officers assigned to the Department of Law and to the office of the Staff Judge Advocate. The staff may not represent military clients in civilian courts.

Cadet Uniforms

As a cadet you will wear a variety of uniforms depending upon the occasion and the weather. During the academic year, you'll wear a classroom uniform: for men it's a blue shirt and trousers; for women it's a blue blouse with a skirt or slacks. The uniform is worn with a jacket in cool weather and a parka in cold weather. A blue uniform for dress occasions is provided, with a skirt matching the jacket for women and trousers for men. Other uniforms are the mess dress for formal social functions, parade dress for formal ceremonies, and utility fatigues for field training.

First-, second- and thirdclass cadets may wear civilian clothes when on leave and weekend passes. Fourthclass cadets are not permitted to wear civilian clothing until approved by the Commandant. However, a distinctive blazer which is issued to the incoming class may be worn with slacks or skirt by fourthclass cadets when authorized.

"Every citizen should know what the law is, how it came into existence, what relation its form bears to its substance, and how it gives to society the fibre and strength and poise of frame."
--President Woodrow Wilson

"Pegasus" stands near the cadet social center.

"I finally resolved that the benefits and gratification gained at the Academy well outweigh the relatively brief absence of any individuality."
--Cadet Kelly Davis, Class of 1988

Cadet Benefits

You will receive your education, room and board, and medical care at specified government facilities free of charge. A monthly allotment adequately covers the cost of uniforms, books, supplies, and personal needs. You may not accept any other grant or scholarship aid, unless the donor allows you to use the financial assistance for personal expenses only. Your pay and allowances are considered sufficient for you to be self-supporting, provided you are economical. The pay is not sufficient to cover any debts contracted prior to entrance, money to send home to your parents, or to spend for luxury entertainment or expensive personal items. The monthly budget covers your obligations with a modest amount left for personal spending, and includes a provision for saving. You receive these savings upon graduation so you may purchase uniforms and meet other initial expenses as an officer. Additionally, the cadet budget contains provisions that allow those cadets who do not have sufficient funds available to obtain interest-free loans to cover any emergency situation.

A government-sponsored life insurance program, Servicemans Group Life Insurance (SGLI), is provided at your option. This plan provides term life insurance from $5,000 to $35,000 in $5,000 increments for a monthly fee, which is set aside from your monthly pay. This insurance policy will be carried forward after graduation.

"I never thought the Academy had a liberal arts education, but with the variety of cadet clubs and extracurricular events here you can gain an honorary master's degree."
--Cadet Carlos L. Salazar, Class of 1988

Cadet Activities

Life at the Academy offers a wide choice of more than 75 activities which the cadets have originated and continued on a voluntary participation basis. These activities, which include professional, recreational, and competitive activities, as well as committees, media, mission support and community-involvement organizations, enable you to develop your professional interests, creative talents, hobbies, and leadership potential. Some provide opportunities for competition with regional or national teams. Weekend trips are arranged in connection with some of these events.

Having fun in fine arts club.

Representative Competitive Activities

Aviation/Competitive Flying Team
Bicycle Club
Bowling Club
Chess Club
Forensic Association
Handball Club
Judo Club
Karate Club
Men's Volleyball Club
Model Engineering Club
Parachute Team
Powerlifting Club
Racquetball Club
Rifle Drill Team
Rodeo Club
Rugby Football Club
Skeet Club
Softball Club
Squash Club

Professional Activities

American Institute of Aeronautics and Astronautics
Arnold Air Society
Biology Club
Chemistry Club
Civil Air Patrol
Civil Engineering Society
Computer Science Club
DeMolays
Electronics Club
Enlisted Awareness Club
Foreign Language Clubs
Forum
Geography Club
History Club
Mechanics Club
Navigation Club
Physics and Astronomy Club
Professional Development Club
Psychology Club

Some of the many USAFA clubs.

Mission Support Activities

Allied Arts Club
Big Brothers/Big Sisters Club
Bluebards
Chorale
Drum and Bugle Corps
Falconers
Fine Arts Club
Photography Club
Sabre Drill Team
Scuba Club
USAFA Explorers
Way of Life Club
Yell Leaders

Cadet Wing Media

BCT Yearbook
Contrails Calendar
Dodo Newspaper
Polaris Yearbook
Talon Magazine

Recreational Activities

Amateur Radio Club
Archery Club
Aviation Club
Badminton Club
Caving Club
Film Club
Hunting Club
Magic Club
Military Science Club
Mountaineering Club
Musician's Club
Saddle Club
Science Fiction and Fantasy Club
Ski Club
Ski Racing Team
Women's Water Polo Club

Committees

Cadet Honor Committee
Car Committee
Class Committee
Class Ring Committee
Entertainment Committee
Fourthclass Training Committee
Heritage Committee

Academy activities for all.

June Week

Graduation from the Air Force Academy is your final achievement of cadet life. During the week prior to graduation, the Academy holds activities honoring your class with parades, socials and other events. The week has special significance for members of all classes as they look forward to new opportunities in the coming year.

Among the highlights of the week are four award ceremonies recognizing individual cadets and cadet units that have achieved scholastic, military and athletic honors. Organizations and citizens who have a vital interest in the Academy sponsor the trophies and awards.

June Week is climaxed by baccalaureate exercises, the graduation parade, and finally, the graduation exercises. Hopefully, your family and friends will be present to see you graduate and to share your accomplishments with you. You will hear a distinguished guest speaker, receive your bachelor of science degree, and take the oath of office for your commission in the Regular Air Force. The years you spent, which sometimes seemed long and difficult, may now appear short and memorable in retrospect.

Graduation will signify your completion of an extremely challenging program which tested your intellectual, physical, moral and leadership abilities. Now that you have passed this supreme test, you are ready to serve your country and perform the duties of an officer for which you have been well prepared. This is what the Air Force Academy is all about!

Organizational Awards Parade.

AIR FORCE CAREER

Science and Development.

USAFA

Operations.

Logistics.

Your entire Academy experience motivates you to become a career Air Force officer. When you accept your commission as a second lieutenant, you begin the five-year commitment you agreed to upon entering the Academy. Sixty-five percent of the Air Force Academy's graduates enter flight training. This training lasts approximately one year, and you incur a longer service commitment following its completion. However, the majority of Academy graduates choose to make the Air Force a career and remain in the service for 20 years or more.

The Air Force Academy's extensive information and counseling program assists you in making a reasonable choice of your initial assignment and in developing tentative long-range plans for your career. Outstanding officers from major Air Force organizations, representing the broad range of Air Force skills, meet with you to discuss professional opportunities, flying and technical training, graduate education and personal aspects of service life. The Cadet Career Information Office, your Air Officer Commanding, the Cadet Counseling Center, and other Academy faculty and staff members provide individual counseling. These discussions are emphasized during your second- and firstclass years so you will have factual, current information concerning the Regular Air Force you will soon enter. You will receive additional counseling as a junior officer. Graduation from the Academy will lead you to rapidly expanding professional opportunities. The advancement of Air Force technology has created many alternatives for officers with technical degrees.

Flying Career Assignments

Most Air Force Academy graduates initially pursue flying assignments. Possessing an aeronautical rating will broaden your Air Force opportunities, as many important staff and command positions require a flying background. The Academy conducts both pilot and navigator indoctrination programs and medically qualified cadets may enter either pilot or navigator flying training following graduation. Air Training Command bases provide pilot and navigator training. After completing the undergraduate instruction and earning your wings, you will be scheduled for advanced training. Pilots and navigators may specialize in aircraft such as bombers, transports or fighters.

Following completion of flying training, you can expect to be assigned to a combat operational unit or mission support unit for several years. As Air Force requirements permit, you may assume duties in other career areas. However, the mission of the Air Force is to conduct air combat operations, and you must anticipate that a significant portion of your Air Force career will be in duties related to flying.

"Space...the final frontier..."
--Gene Roddenberry, creator of Star Trek

Going up with two F-15s.

Nonflying Career Assignments

If you do not enter flying training, you will be assigned to one of several mission support career fields. For your initial assignment, you generally will be assigned to one of the scientific, engineering, technical or combat support areas in which you will use your Academy training.

Civil Engineering.

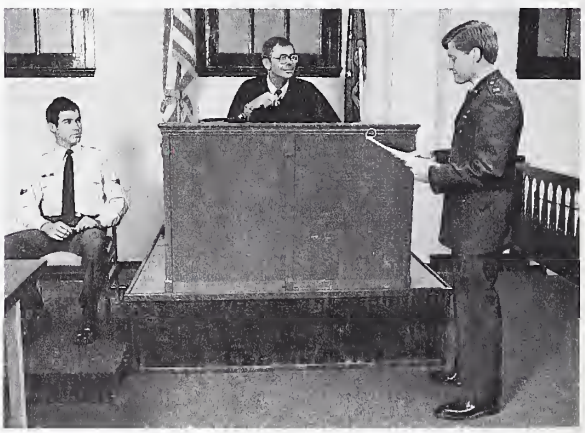
Authorized initial assignments for Academy graduates in each class are subject to change annually, based on the needs of the Air Force. From among the areas designated for your graduating class, you will be allowed to select a position for which you are academically qualified. After completing an assignment of three to five years in that specialty, you may volunteer for duty in other Air Force career areas in which you are qualified. Your individual qualifications and Air Force requirements for personnel in that field will be considered in reviewing your application for reassignment.

There are more than 80 major career areas which include many nonflying Air Force Specialty Codes (AFSCs). These disciplines embrace the broad spectrum of the sciences and engineering, plus the fields of administration, management, finance, maintenance, supply, special investigations, cartography, human resources, health services, public affairs, education, audiovisual services, law, and medicine.

Legal and Medical Training

Up to 2 percent of each Academy graduating class may be sent directly to medical school upon graduation. Training is completed under the Armed Forces Health Professions Scholarship Program or at the Uniformed Services University of the Health Sciences. These two programs are available to all active duty officers, and selection is on a competitive basis. The number of students will be based on the needs of the Air Force.

There is currently no provision for direct entry into law school upon graduation from the Academy. Congress has authorized 25 active duty Air Force officers to enter law



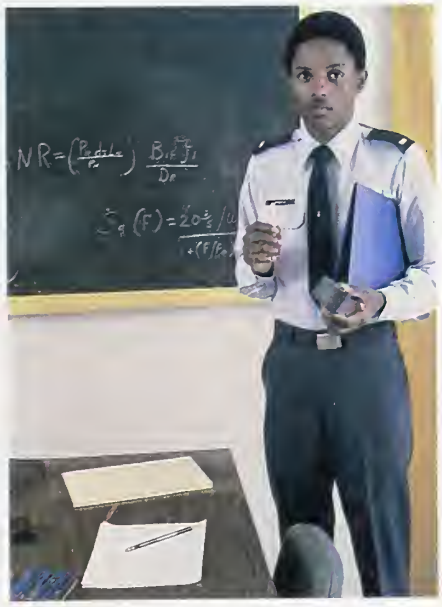
Military justice.

school annually. An Academy graduate must complete two years on active duty before becoming eligible for consideration. Selection for law school sponsorship is on a competitive basis among all active duty officers who apply.

"Those who think an Academy education ends after four years don't know what they're talking about."
--Christopher D. Miller, Class of 1980, Academy Rhodes Scholar

Graduate Education

Cadets who have maintained outstanding grade averages may compete for nationally competitive graduate scholarships and fellowships such as Rhodes Scholarships, National Science Foundation Fellowships, National Collegiate Athletic Association Scholarships, Guggenheim Fellowships and other selected competitions. If they are physically qualified, Academy graduates who receive advanced education through one of these awards usually attend flying training after completion of their graduate programs.



In pursuit of knowledge.

Graduates who ranked in the top 15 percent of their class in overall performance who did not receive scholarships upon graduation may apply for graduate education after serving on active duty for approximately three years. These graduates are normally assured of selection for master's degree programs, provided they have performed well as officers and the Air Force has a need for the degree they wish to pursue.

Graduates who did not rank in the top 15 percent of their class may also apply for advanced degree programs early in their careers. Selection for schooling and scheduled attendance will be based on the individual's qualifications and Air Force requirements. Selected officers will have their tuition and fees paid and receive full pay and allowances.

Career Benefits

Your Air Force commission guarantees you a job with an outstanding career compensation package. The pay scale and benefits are established by law. An officer receives basic pay which is taxable, and other benefits which are not taxable, including on-base living quarters and a subsistence allowance. When not occupying government quarters, the officers receive an off-base housing allowance.

As an Air Force officer, your salary compares favorably with most civilian professions. If you become a pilot or navigator, you will earn flight pay in addition to basic pay. This will increase your salary considerably.

Additional benefits which you receive are: base exchange and commissary privileges, officers' club membership, recreational facilities, VA and FHA mortgage loan insurance, full medical and dental care, group life insurance, and 30 days of vacation with pay each year. If you are married, your dependents will receive comprehensive medical care also. Air Force legal officers also provide advice on most legal matters.

Dental care.

Advancement in the Air Force compares favorably to advancement in a civilian occupation. It depends upon the length of service, qualifications and performance.

As you progress in rank, your advancement will be based increasingly upon your personal merit and initiative. The Air Force is a vastly technological and far-reaching organization, yet one that recognizes the value of the individual. In fact, the Air Force puts the highest premium on leaders with vision, dedication, and ability. It offers a stimulating challenge and an exciting future in a wide spectrum of fields to Academy graduates who effectively employ their leadership talents.

Normally, during your career you will be assigned to one or more of the armed forces' schools for advanced professional studies. These include the Squadron Officers' School, Air Command and Staff College, and Air War College located at Maxwell AFB, Alabama. In addition, opportunities arise to attend the Armed Forces Staff College in Norfolk, Virginia, and the Industrial College of the Armed Forces or the National War College in Washington, D.C. Finally, some individuals are selected to attend sister service or foreign military schools.

During your career you will probably have duty assignments both in the United States and overseas. Each time you move, you will receive reimbursement for transportation costs, an extra allowance for incidental expenses of moving, and free shipment of household goods. On the average, an officer will move to a new assignment every three to four years. The variety of United States and overseas assignments during your Air Force career enables you to visit many places of interest. In addition, you'll be able to fly at no expense on a space-available basis on military aircraft and at reduced rates on commercial airlines for personal travel.

The government provides for retirement at no expense to the officer. You may retire after 20 years of service at 50 percent of your base pay. Benefits increase proportionately to 75 percent of base pay at 30 years of service. You will contribute to Social Security and also receive those benefits when eligible.

The Academy is the Air Force's only program which guarantees a Regular commission to all graduates. This commission provides excellent job security with stable employment, pay, and benefits.

Career Obligations

A career in the United States Air Force entails certain obligations as well as benefits. You are expected to serve your country with serious purpose and dedication. You may be considered vital to the maintenance of national or international security or important to the scientific and technological advancement of mankind. Some of your assignments may be to areas that are underdeveloped or remote or where living conditions are below standards to which you have been accustomed. Your family may not be permitted to accompany you on certain assignments. Under all conditions you will be expected to give your best and provide exemplary leadership for those under your command.

Academy Graduate Career Areas

Class of 1985

Shown below are the career areas available to Academy graduates of the Class of 1985 for their initial assignments in the Air Force.

Operations

Pilot
Navigator
Air Traffic Controller+
Air Weapons Controller
Minuteman Missile Launch
Titan Missile Launch
Space Systems Analyst+

Communications-Electronics

Communications Systems
Communications Maintenance
Communications-Electronics Engineer

Computer Technology

Computer Systems Development
Computer Operations Officer
Computer Systems, Plans & Programs

Comptroller

Cost Analysis+
Management Analysis+

Civil Engineering

Logistics

Missile Maintenance
Aircraft Maintenance
Munitions Officer
Supply Operations+
Acquisition Contracting+
Production Manufacturing+

Intelligence

Signals Intelligence+
Imagery Intelligence+
Air Intelligence+

Security Police

Scientific and Development Engineering

Physicist
Chemist+
Scientific Analyst
Acquisition Project Officer
Electrical Engineer
Mechanical Engineer
Astronautical Engineer
Aeronautical Engineer
Project Engineer
Behavioral Scientist+

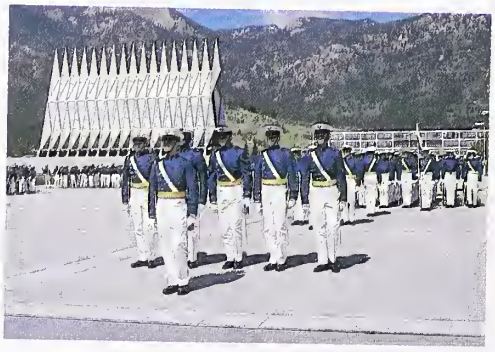
+Presently limited to a specified number from each class.

"There are a lot of Academy grads in NASA's space program. The four years I spent at the Academy laid the foundation, gave me the confidence and motivation to set high goals and stick to 'em."
--Astronaut Major Guy S. Gardner, Class of 1969

LEADERSHIP PROGRAM

Leading newcomers.

USAFA



Leading the way.

Leading from above.

"No man is good enough to govern others without the other's consent."
--President Abraham Lincoln

The Commandant of Cadets directs the Academy's leadership program. The program develops you from a basic cadet without military experience, to an Air Force officer prepared and motivated to defend our country.

Leadership is based on the whole-person concept, meaning that many attributes of character, dedication, and professionalism are necessary to complement your academic education and complete your preparation for Air Force service. Fulfilling these high standards of performance, conduct, and military bearing is not easy. As you develop you will realize that worthwhile goals in life do not often come easily but, in the long run, the rewards are usually worth the effort. You will come to realize, also, that your challenge of leadership could involve great responsibility in terms of national and international security.

Leadership revolves around the primary mission of the Air Force, which is to fly and--when the government so directs--to fight in defense of national interests. Since the mission is based on airpower, the aviation training you receive as a cadet is a significant part of your career preparation.

During fall and spring semesters, you will have classroom instruction in military theory, leadership skills, values, heritage, doctrine, and Air Force organization. You will also have the opportunity to hear special presentations by well-known military and civilian leaders. These are all designed to aid in your development as a cadet and future Air Force officer. You will be active in many types of summer military and aviation training to develop leadership ability. You will be evaluated on your performance in these programs which are important parts of your cadet progress and graduation requirements. When you earn a commission in the United States Air Force, you will be expected to perform as a professional officer.

Squadron Commander.

The Cadet Wing

The Cadet Wing is organized using a military chain-of-command. Each cadet is assigned to one of 40 squadrons with approximately 110 other cadets. These squadrons are organized into four groups. Upperclass cadets learn leadership skills by filling command and staff positions within this structure.

Upperclass cadets not only lead the Cadet Wing during the school year, but during the summer as well. Such summer programs as BCT; Survival, Evasion, Resistance, and Escape (SERE); and the various aviation courses are almost entirely run by cadets who serve as commanders, instructors, and staff.

At the top of the military hierarchy of the Cadet Wing is an officer chain-of-command. The Commandant of Cadets, a brigadier general, is the commander of the Cadet Wing. Under him is a staff of officers who control the Cadet Wing, military instruction, and cadet aviation programs. They also advise the cadets on effective leadership of the Wing.

The cadet and officer chains-of-command interact to provide cadets the opportunity for input to the policies and regulations that direct their lives. Both focus on maintaining the military atmosphere and discipline necessary for the proper development of future Air Force officers.

Honor And Ethics

Trust and integrity are essential to our chosen profession. Without them our credibility as a peacekeeping force would quickly erode and our country would lose its confidence in our ability to defend its way of life. The Honor Code establishes the standard of moral behavior that we must accept. Our Honor Code states:

"WE WILL NOT LIE, STEAL,
OR CHEAT, NOR TOLERATE
AMONG US ANYONE WHO
DOES."

These simple words provide a cornerstone for the development of a personal code of ethics designed to serve Academy graduates throughout a lifetime of service. All cadets must accept the Honor Code and live strictly by its tenets. You must also be prepared to live by the principles of professional ethics that extend beyond the minimum standards of the Code. Some of these principles are confidence, courage, honesty, fairness, loyalty, acceptance of responsibility for your actions, and placing duty and service to country above self interests.

The Cadet Honor Committee administers and teaches the Honor Code. Members are elected from the first and second classes in each squadron. Immediately after entering the Academy, you'll receive instruction in this program in an informal atmosphere where you are encouraged to ask questions and resolve any problems which may arise. After basic cadet training, you will take an oath to abide by the Honor Code. From that point on you are expected to live by the principles of the Code and maintain high ethical standards.

The Honor Code is specific and clear in its demands. You are expected to have complete integrity in both word and deed, you will not lie or quibble, and you are expected to report yourself for any Honor Code violation. You are also expected to confront any other cadet who you believe has violated the Code and to assure that the incident is reported if your suspicions remain.

Possible breaches of the Code are brought before the Honor Board of seven cadets and one officer. If the Board finds the Honor Code has been violated, the case will be reviewed by a second board, the Honor Sanctions Board. This board, which consists of three senior officers and two cadets, determines appropriate punishment. This can include a recommendation for disenrollment, or other lesser penalties that allow a cadet to remain at the Academy, depending on the circumstances of each case. In all of these proceedings, protecting a cadet's rights is of prime importance.

"**To see what is right and not do it is want of courage.**"
--Confucius

Beyond living by the Honor Code, you'll learn the principles of professional ethics in many different ways throughout your four years at the Academy. Several courses in the academic curriculum contain specific material on ethics.

The Honor Code is not a difficult standard to live by. Initially it may require some

Class wall.

self-control and conscious effort, but it quickly becomes an ingrained habit and a part of your total behavior. The Honor Code greatly enhances the quality of life at the Academy. Cadets and graduates alike cherish the experience. In conjunction with the Code, the education in professional ethics will provide you with a solid foundation to serve and guide you in the complex responsibilities that lie ahead.

Basic Cadet Training

Your first exposure to military life occurs in BCT, a rigorous orientation program during your first summer at the Academy. Your performance and attitude in this program are critical factors in your future success at the Academy. Since it is vitally important for you to understand what is expected of you, a detailed description follows:

Arrival

When you arrive, you will immediately be faced with the fact that the Air Force Academy is not a typical college or university--it is a military institution. You will soon learn that the demands of the Academy are significantly different than those of a civilian school.

Your civilian clothes will be shed for military uniforms, and your hair will be cut to Academy standards. From the start, upperclass cadets will instruct you on how to make the transition from civilian life to the Air Force. They will teach you everything from marching and proper wear of the uniform to how to successfully complete the obstacle course.

Oath

Shortly after you arrive, you will participate in one of the more solemn occasions of your cadet career--taking the oath that makes you a member of the Armed Forces of the United States. By this pledge of loyalty, you promise to defend the Constitution of the United States against all enemies. It is an occasion to reflect upon what this country means to you, and what defending your country is all about. Keep in mind before you take this oath that the Air Force Academy is here to produce officers who will defend their country whole-heartedly. If you have any reservations about this oath and the commitment it represents, resolve them in your own mind before you make the commitment.

The first day.

The Rigors of BCT

Your first five weeks at the Academy will be both demanding and rewarding. The upperclass cadets who conduct BCT will lead you to your limits. In the end, however, you will emerge with a deep sense of pride in your accomplishments.

BCT consists of two phases, one in the Cadet Area, the other in Jack's Valley. Each phase has its own demands as well as its own rewards.

BCT in the Cadet Area

This phase focuses on the transition from civilian to military life. Upperclass cadets instruct you in military topics ranging from customs, courtesies and the Air Force heritage to rifle manual and marching. You are given plenty of opportunity to demonstrate your proficiency through knowledge tests, drill and rifle manual competitions, parades and inspections. You will also fly in several different aircraft and complete the obstacle course.

BCT in the Cadet Area. . .

Physical conditioning is also an important part of BCT. Your daily training will include exercises, running, and competitive sports. All activities condition you to meet the physical demands that will be placed upon you during BCT and the school year.

BCT is not all rigorous training and nonstop action, although it may seem like it at times. Regular breaks are scheduled to give you time to relax and write home, and prepare for the intense demands being placed on you. Special programs, such as the Doolie Dining Out which takes place in the homes of Air Force personnel and local civilians, give you a break from the training.

BCT in Jack's Valley

Following the military and physical preparation of BCT in the Cadet Area, training continues in Jack's Valley, a wooded area on the Academy grounds that offers a field setting for this phase of BCT.

While in this field encampment, you wear the "fatigue" utility uniform with combat boots and live in tents. During your stay in Jack's Valley, you'll take part in many activities designed to push you to your physical limits and build confidence in yourself and your fellow classmates. You will also

become familiar with small unit tactics, firearms, and air base defense.

When you complete training in Jack's Valley, you'll march back to the cadet area to finish BCT.

BCT is no girl scout camp.

Field Day

Field day is the final input into the squadron competition that runs throughout BCT. Your squadron competes against other BCT squadrons in events such as distance races, log relay, and tug-of-war to test teamwork. Points earned, added to those earned throughout BCT for marching, knowledge tests, and performance in a variety of other activities, determine the "honor squadron."

Acceptance Parade

Your achievements throughout BCT are finally recognized when you receive your shoulder boards during the Acceptance Parade. An upperclass cadet from your academic-year squadron will present you with your fourthclass shoulder boards. You are now a fourthclass cadet, the Academy's equivalent of a freshman. It is the end of one test, since you have proven yourself worthy to enter the Cadet Wing, but the beginning of another, since you are now entering the academic year. In succeeding years, you will become a thirdclass cadet, a secondclass cadet, and finally, a firstclass cadet.

Parents' Weekend

The Labor Day weekend is the first holiday of the academic year. The Academy invites parents to visit their sons and daughters and get a firsthand look at the Academy. Parents' Weekend is also an occasion for an open house of the Academy's facilities, briefings by the faculty and staff, and several social functions.

Military Training

Your military training, begun in BCT, continues throughout your four years at the Academy. It is an integral part of your summer and academic year programs.

The wall climb during Field Day.

Fourthclass Year

Your first military training experiences in BCT prepare you to become part of the Cadet Wing. The Professional Military Training (PMT) program provides the initial foundation of Air Force knowledge and skills necessary to transition you into the Academy environment and provides the leadership skills necessary for success in the military profession.

Fourthclass PMT concentrates on developing an appreciation for the qualities of a professional officer, particularly the need for building individual professional values. You will spend considerable time studying regulations, Contrails (the Air Force Cadet Handbook), and Academy heritage.

"When you first arrive, you don't know what to expect. It is the same in whatever you do in life. So, put your best foot forward, keep it out of your mouth, and give it your best shot."
--Cadet Timothy R. Walker, Class of 1988

Thirdclass Summer

All cadets take SERE training during their thirdclass summer. The training is conducted at the Academy and in the nearby Rocky Mountains. During the Continental United States (CONUS) Field Trip, a one-week program, you'll make short visits to two Air Force bases to acquaint you with operational missions of the Major Air Commands. In addition to SERE and CONUS, you will participate in one other program:

Parachuting--You train in free-fall parachuting and become familiar with emergency parachuting as it pertains to Air Force careers; or,

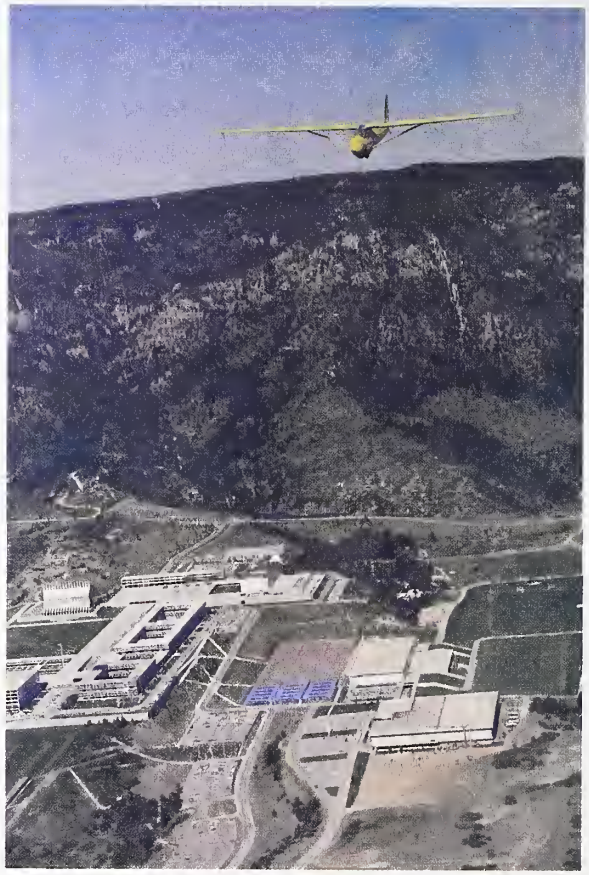
The Soar-for-All Program--You gain firsthand experience in flying through instruction in ground school and flights in Academy sailplanes. If you are not scheduled for training during the summer you will be scheduled during the academic year.

Thirdclass Year

The thirdclass PMT program builds upon the foundation established during the fourthclass year. Thirdclass PMT concentrates on your transition from a follower to a leader. To accomplish this transition, thirdclass cadets learn more about effective leadership so they can lead and train fourthclass cadets during the next two years.

Secondclass Summer

Your third summer at the Academy emphasizes leadership application and increased knowledge of the Air Force. You may serve as an instructor in BCT, SERE, parachuting, soaring, navigation, and other



Soaring over the Cadet Area.

Aerial pickup and rescue.

programs. You will also participate in Operation Air Force, a three-week world-wide program at an operational Air Force base, to observe and gain a better insight into the duties of officers and enlisted personnel.

Secondclass Year

The secondclass PMT program stresses leadership and supervisory skills for application in increasingly responsible upperclass leadership roles. Similarly, the training program provides opportunities for you to assess and improve your leadership abilities through small-unit leadership situations.

Secondclass cadets also receive further instruction in honor and human relations issues. These discussions focus on developing professional officers who exemplify a strong character and a mature sense of responsibility.

Firstclass Summer

During your fourth summer, you will refine your leadership skills and prepare for commissioning as a Second Lieutenant. You will assume senior leadership positions in such programs as BCT and SERE training. Several optional programs are also available to round out your summer training requirements. In addition to the programs noted under secondclass summer, the options include:

Pilot Indoctrination--Required for all firstclass cadets who will enter Air Force undergraduate pilot training following graduation. Instruction is conducted in T-41 aircraft at the Academy airfield.

Navigation--Required of all cadets not scheduled to enter undergraduate pilot training. Academics, trainers, simulators, and flight experience in T-43 jet aircraft provide knowledge of navigation fundamentals and a familiarity with the aircrew environment.

Navigation Instructor--Offers selected cadets technical and professional training to serve as navigation instructors during the academic year.

Military Training Options--Provide opportunities for cadets to select programs which will help round out their professional development. (See pages 142 and 143.)

Orienteering course.

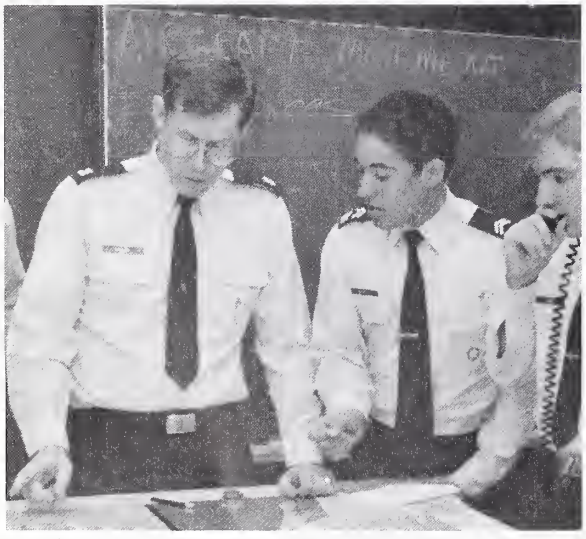
Firstclass Year

The firstclass PMT program culminates cadet military training at the Air Force Academy. It focuses on your ability to apply previously learned leadership and management principles, while providing you with the practical knowledge you will need for entry into the Air Force.

You will apply leadership and management skills as a cadet officer within the Cadet Wing, while learning specific information to prepare you for initial active duty.

Professional Military Studies

The Commandant's program in Professional Military Studies (PMS) focuses squarely on the profession of arms. The PMS curriculum stresses military professionalism, officership, the art of war, airpower heritage, military theory, doctrine, and force employment. In short, PMS provides future Air Force officers with a solid grounding in the traditions, tools, operating practices, theoretical principles, and challenges of the military profession.



Upperclass cadets discuss airpower doctrine.

There is one required or "core" course in PMS for each of the four classes at the Academy:

Your first PMS course introduces you to the military profession. You will study the mission, organization, and operation of the U.S. military establishment. You also will begin to learn about the application of airpower and the Air Force's role in supporting U.S. national objectives. Special emphasis is placed on identifying and understanding the personal and professional guidelines expected of Air Force officers.

Your thirdclass PMS course focuses on issues vital to the warfighting role of the Air Force. Building on the knowledge acquired in your first PMS course, you will study basic airpower doctrine and employment concepts. Case studies will be used to examine how air commanders have applied the principles of war in specific battles and campaigns. A wargame will allow you to apply the principles of war and practice military leadership in a simulated combat environment.

In your secondclass PMS course you will gain an understanding of basic service doctrine and its relationship to current force structure. You also will examine how the four branches of the armed services propose to apply current employment concepts on the modern battlefield. A wargaming exercise will help you understand the purposes and complexities of joint staff planning.

As a firstclass cadet in our capstone PMS course you will study the writings of significant military theorists and examine the military force structures of selected foreign nations. Although your firstclass PMS course places special emphasis on the military forces of the Soviet Union and the Warsaw Pact nations, it employs analytical techniques which can be used as a basis for studying the military capabilities of other nations as well. This capstone course will give you a foundation in military theory and force analysis upon which you can build throughout your Air Force career.

Aviation Instruction

Aviation instruction provides a varied exposure to the flight environment throughout your years at the Academy. Some courses are mandatory to ensure each cadet receives a broad aviation background. The remainder are electives available year round.

Your aviation education begins during BCT with orientation flights in a helicopter, a Cessna T-41, and a jet navigation trainer. The early timing of this training provides a clear realization of your future role in the flying Air Force.

Soaring Program

Soaring training is held on a year-round basis, and is available to interested cadets. In your thirdclass year, the basic course includes dual and solo instruction involving approximately 25 flights. Advanced instruction leads cadets through various Federal Aviation Administration (FAA) ratings. All training is conducted in Academy sailplanes and supervised by highly qualified Air Force personnel. Primary flight instruction is given by cadet instructors.

Parachute Training

Selected cadets who volunteer and meet stringent physical requirements may receive parachute training. The basic course involves five freefall jumps, training you for an emergency escape from a disabled aircraft. Selected cadets from the basic course will take advanced courses to become parachute instructors. These cadet instructors may become members of the Wings of Blue, the Academy's highly successful precision parachute team.

Aviation Fundamentals

During the fourthclass year, all cadets must take a basic course in Air Force flight activities, operations and space environment. You receive simulator rides, a T-43 flight mission to an Air Force base, and presentations in the planetarium. Firstclass cadets who are not scheduled to go to Air Force undergraduate pilot training after graduation must take a more advanced course in aviation fundamentals.

Many cadets try parachuting.

Powered flight in a T-41 aircraft.

Pilot Indoctrination

Firstclass cadets who plan to enter undergraduate pilot training must take a T-41 pilot indoctrination course as their flight core requirement. The T-41 aircraft is a military version of the Cessna 172. The instruction is conducted at the Academy airfield by the 557th Flying Training Squadron. This training includes ground school, dual and solo flights, and totals approximately 21 flight hours.

Aviation Science

Several aviation science courses provide you with firsthand flight experience while furthering your knowledge and understanding of the flight environment. The courses teach flight concepts, instruments, and atmospheric factors. These skills are then applied during flight missions in the T-43 aircraft.

In most aviation science courses, you will take a weekend cross-country flight to an Air Force base. There you will be exposed to various operational flying units, crew members, and possibly get a flight in a first-line jet aircraft.

While most aviation science courses focus on the fundamentals of navigation, some will enable you to study the avionic systems of current and future aircraft and to work with some of this equipment in flight. You may also achieve cadet instructor navigator status and provide instruction to cadets in basic navigation courses. If you plan to attend navigator training, you may take an advanced course which will better prepare you for the rigors of undergraduate navigator training.

Extracurricular Flying

If you want to pursue flying as an extracurricular activity, you may take light plane training as a member of the USAF Academy Aviation Club. Cadets may earn FAA ratings from private pilot through flight instructor at reduced cost. Flight training occurs in Aviation Club-owned aircraft which include 12 Cessna 172s and a Piper Arrow. The normal academic schedule includes ground training in preparation for FAA written exams. Cadets with a private pilot's license may try out for the Cadet Competition Flying team. The team owns its own aircraft and represents the Academy in competition with other schools around the country.

Astronomy Program

An astronomy program provides courses dealing with the space environment. The planetarium, observatory, and T-43 airborne laboratory involve cadets in both the observational and theoretical aspects of astronomy. They incorporate the latest results of the space program and scientific speculations about the future. Flight missions provide the opportunity to visit major observatories and space facilities for a close look at the most recent developments in space technology.

"Any Air Force that does not keep doctrines ahead of its equipment and its vision afar into the future can only delude the Nation into a false sense of security."
--Gen H. H. "Hap" Arnold

Cadets learn navigation in the T-43, the flying classroom.

ACADEMIC PROGRAM

Math.

USAFA

Navigation.

Engineering.

"There are many things here that take getting used to. Studying is one of them. Studying sometimes tends to make life a little rough, but books never killed a cadet yet."
--Cadet Barbara Gable, Class of 1986

The academic program, under the direction of the Dean of the Faculty, allows cadets to acquire a broad education in the basic sciences, engineering, humanities, and the social sciences. You must complete a balanced sequence of prescribed courses in all of those areas. You may choose a major in a specific area and fulfill the requirements for that degree, or you may elect the basic academic program of study leading to a bachelor of science degree. Cadets who have the talents and interests to pursue further study may take elective enrichment courses.

The total academic curriculum develops future Air Force officers with innovative, analytical, and resourceful minds. The classroom instruction encourages you to communicate and express your ideas, thereby developing the intellectual traits of leadership. The enrichment program encourages you to develop your full academic potential and to acquire a background for possible graduate education during your future career.

After you complete basic cadet training, you will enroll in academic classes as a fourthclass cadet. The same expectations of achievement and performance required of you during the summer training carry over into academics. You must learn to budget your time and study regularly in order to accomplish the academic workload, which will seem extensive compared to your previous high school requirements.

You will use handheld scientific calculators in all technical courses at the Academy. Because of the need to standardize instruction in the use of programmable calculators, all cadets of a particular class must own and be able to use the specific model selected for their class. The required model will be provided you in August during initial textbook issue, so don't purchase a calculator prior to entering. If you have questions, write the Department of Mathematical Sciences at HQ USAFA/DFMS, USAF Academy, Colorado Springs CO 80840-5811, or call (303) 472-4470.

Each cadet must earn at least 177 semester hours of credit, which is greater than the requirements of a civilian university.

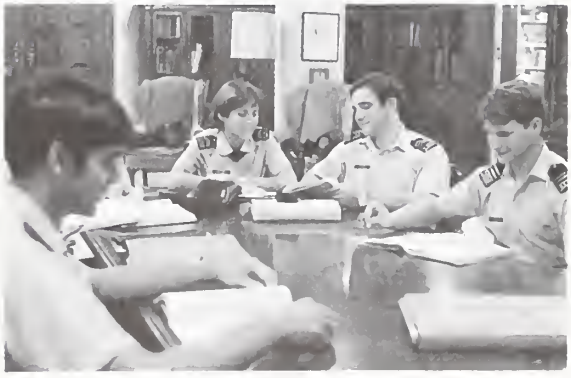
Semester Schedule

Your Air Force Academy education continues year round, and is divided into three sessions: a summer term, a fall semester, and a spring semester.

The summer term lasts approximately ten weeks. The new cadet class usually enters the Academy during the first week in July, the midpoint of this term, and begins basic cadet training.

During the summer term, the three upper classes participate in leadership and military training programs at the Academy, as well as at military bases around the United States and abroad. A limited number of academic courses are also offered. All cadets except the new class receive approximately three weeks of leave during the summer.

The fall and spring semesters contain approximately 17 weeks of instruction, or 42 lessons per semester. The fall semester begins in mid-August and ends the week before Christmas. The spring semester begins the first week in January, following Christmas leave, and ends in mid-May. Each semester includes a final examination period of six days.



You'll spend plenty of time studying.

Wintertime in the Rockies.

Grading

Most courses at the Academy are graded on a quality point scale, with an "A" worth four quality points per semester hour, and an "F" worth zero.

Several courses, particularly military training, airmanship and physical education, are graded on a Pass (P)/Fail (F) basis.

Cadets are graded on quizzes, examinations, and class recitations. For each 50-minute class period, you normally are expected to devote 100 minutes to outside preparation. You may be called upon to participate and recite in class.

A computerized grading system enables instructors to keep a constant evaluation of each cadet's performance. You are informed of your grades by a progress report at mid-semester and a final report at the end of the semester.

Cadet Achievement

Cadets are recognized for achievement in academic courses and military performance as follows:

Cadets with a grade point average (GPA) of 3.0 or greater are placed on the Dean's List at the end of each fall and spring semester. Cadets who receive this distinction wear a silver star on their uniform.

Dean's List.

Commandant's List.

Cadets who have achieved a military performance average (MPA) of 3.0 or greater are placed on the Commandant's List at the end of each fall and spring semester. The insignia denoting this honor is a silver wreath.

Cadets who are on both the Dean's and Commandant's Lists are placed on the Superintendent's List denoting excellence in both academic and military performance. You'll wear a silver star enclosed in a silver wreath if you are on the Superintendent's List. If you are on any of these lists, you may be awarded additional privileges on weekends.

Superintendent's List.

Deficiency and Disenrollment

Deficiencies may occur in academic studies, military training, or physical education. A cadet will be considered deficient in academic studies at midsemester report or the end of the semester or term when one of the following conditions exists: a grade of F or Incomplete in one or more courses, a cumulative or semester GPA of less than 2.0, or a major's GPA of less than 2.0 in the firstclass year. Cadets deficient in studies are reviewed by a class committee at each midsemester progress report and the end of each semester or term.

At the end of each semester or term the class committee may recommend to the Academy Board that a cadet who is deficient in studies be disenrolled for academic deficiency. If the committee determines that both a cadet's overall performance and the probability of successfully completing the academic program justify it, they may recommend retention. The Academy Board will consider the recommendation of the class committee and make final decisions.

Cadets retained by the Academy Board may be directed to accomplish one or more of the following: repeat or take a specific course during a subsequent semester, underload one course, change academic majors, attend a summer term in place of leave, be turned back to the next succeeding class, or take any other action deemed appropriate.

Cadets will be considered deficient in military performance if they fail a Professional Competency Exam at the end of the semester, or if their MPA is below 2.0 at the end of the semester. A Military Review Committee evaluates deficient cadets and places them on aptitude probation or initiates other corrective action. A cadet whose conduct or aptitude for commissioned service is seriously deficient may be disenrolled through the action of the Military Review Committee, if approved by the Academy Board.

Cadets will be considered deficient in physical education if they fail one or more items on the Physical Fitness Test (PFT) and have a total score below 226, or if their 1.5 mile aerobics run time is slower than 11:45 (men) and 12:30 (women). Cadets who receive a failing grade in PE 120, PE 220, PE 320 or PE 420 will also be considered deficient.

Deficient cadets will be reviewed by the Athletic Review Committee one week following the final PFT make-up test in the fall and spring semesters. The committee will make recommendations to the Academy Board through the Director of Athletics. Committee recommendations may include: a remedial conditioning program, athletic probation, attendance at a summer term physical education program in place of leave, turn back to the next succeeding class, or disenrollment for physical aptitude deficiency.

Instructors are always available for help.

Graduation Requirements

All cadets must meet the following graduation requirements:

Demonstrate an aptitude for commissioned service and leadership by having a minimum cumulative MPA of 2.0.

Be satisfactory in conduct.

Be proficient in physical education and military training.

Complete the requirements for the core curriculum and for an academic major or the basic academic program.

Have a minimum cumulative GPA of 2.0 and a cumulative GPA of 2.0 in a major or the basic academic program.

Academic Core Courses

During your fourth- and thirdclass years, you will concentrate on prescribed core courses. In later years your program will contain more majors' courses. The Summary of the Curriculum shows the standard sequence required of most cadets. In a two-course sequence, the first course is offered in the fall. Single-course offerings are split between fall and spring to help balance departmental workloads. Cadets with advanced standing will take some courses ahead of schedule.

Sharing the joy.

Class of 1989

COURSE NUMBER	COURSE TITLE	SEMESTER HOURS
	Fourthclass (Freshman)	
Summer		
Mil Tng 100	Basic Cadet Training	3
Phy Ed 100	Basic Physical Training	2
Fall and Spring		
Beh Sci 110*	General Psychology	3
Biology 110*	Introduction to Biological Systems	1.5
Chem 111-112*	General Chemistry	6
Comp Sci 100*	Introduction to Computer Science	3
English 111*	Composition	3
For Lang 131-132	Basic Foreign Language	4.5
History 101*	Modern World History	3
Math 131-132-133*	Calculus	9
PMS 110	Professional Foundations	2
AV 100	Introduction to Aviation Fundamentals and Space Science	1
Phy Ed 105-106	Competitive Athletics/Fitness Tests	2
Phy Ed 120	Physical Education	1
	Thirdclass (Sophomore)	
Summer		
	Glider or Parachuting Instruction Option	2
Mil Tng 220	Survival, Evasion, Resistance and Escape	3
Mil Tng 230	CONUS Field Trip	1
Fall and Spring		
Beh Sci 220*	Behavioral Science Applications to Leadership - Phase I	1.5
Econ 221*	Principles of Microeconomics	3
Econ 222*	Principles of Macroeconomics	1.5
El Engr 210*	Digital Signals and Systems	3
English 212*	Persuasive Composition and Speech	3
Engr 110*	Engineering Fundamentals	3
History 202*	Modern Warfare and Society	3
Mgt 203*	Introduction to Management	1.5
Math 211	Differential Equations with Matrix Algebra	3
Math 220	Probability and Statistics	3
Mech 210*	Mechanics and Materials in Engineering Design	3
Physics 211*	General Physics I	3
Pol Sci 200	Introduction to Political Science	1.5
Pol Sci 201*	American National Government	1.5
Pol Sci 203*	The International Political System	2
PMS 225	Airpower Doctrine and Employment	2
Armnshp 451	Soar for All	2
Electives	Glider or Parachuting Instruction	2
Phy Ed 205-206	Competitive Athletics/Fitness Test	2
Phy Ed 220	Physical Education	1

THE CURRICULUM

Class of 1989

COURSE NUMBER	COURSE TITLE	SEMESTER HOURS
	Secondclass (Junior)	
Summer		
	Summer Military Options	2
Mil Tng 301	Operation Air Force	2
Fall and Spring		
Aero 311*	Fundamentals of Aeronautics	3
Aero 312*	Introductory Engineering Thermodynamics	3
Beh Sci 330*	Behavioral Science Applications to Leadership - Phase II	1.5
El Engr 310*	Signals and Systems	3
English 330*	Technical Composition and Speech or	
or 350*	Advanced Composition and Speech	3
History 303	The U.S. in a Changing World: Critical Issues	1.5
Law 300*	Introduction to Law	3
Philos 310*	Ethics	3
Physics 311*	General Physics II	3
Electives	Academic Electives	12
PMS 330	U.S. Force Employment Concepts	2
Phy Ed 305-306	Competitive Athletics/Fitness Test	2
Phy Ed 320	Physical Education	1
	Firstclass (Senior)	
Summer		
	Summer Military Options and Flight Core[1]	5 to 7
Fall or Spring		
Astro 332*	Introduction to Astronautics	3
Engr 430	Engineering Systems Design	3
English 406*	Masterpieces in World Literature	3
Law 400*	Law for Commanders	3
Physics 411*	Modern Physics in the Air Force or	
or 420*	Modern Physics for Science and Engineering	3
Pol Sci 412*	Defense Policy	3
Electives	Academic Electives	12 to 21
PMS 440	Military Theory and Force Analysis	3
Phy Ed 405-406	Competitive Athletics/Aerobics Test	2
Phy Ed 420	Physical Education	1
	TOTALS:	
	Academic Core Courses	111.5
	Academic Elective Courses	24 to 33
	Military/Flying Courses	30 to 34
	PE/Athletic Courses	14
	Total Curriculum[2]	179.5 to 192.5

[1] Flight core may be taken summer, fall or spring.
[2] Total curriculum hours depend on major selected (if any) and flight core scheduling.
* Honors versions of these courses are offered.

Academic Majors

All cadets may choose to major in a subject area. The total major requirements for graduation are 37 core courses plus nine major courses (total 46) for a divisional major or 11 major courses (total 48) for a disciplinary or an interdisciplinary major. If you do not desire to major in one subject you may choose the basic academic program, a nonmajor, constructed of the core plus eight electives that total 45 academic courses.

You must choose your academic plan after spending three semesters taking a diversity of core courses. A faculty advisor will explain the requirements of all majors and will assist you in planning a course program for future semesters based on a major or a nonmajor track. Faculty departments and divisions administer the following 23 academic majors:

Disciplinary Majors

Science and Engineering

Aeronautical Engineering
Astronautical Engineering
Biology
Chemistry
Civil Engineering
Computer Science
Electrical Engineering
Engineering Mechanics
Engineering Sciences
Mathematical Sciences
Physics

Social Sciences and Humanities

Behavioral Sciences
Economics
Geography
History
International Affairs
Management

Interdisciplinary Majors

Operations Research
Space Sciences

Divisional Majors

Basic Sciences
General Engineering
Humanities
Social Sciences

If you choose to major in a subject area, you must complete all the requirements. If not satisfied with the original major selected, you may change the major, provided requirements can be met without excess overload courses. You may earn more than one major if you fulfill all requirements. Some major courses are mandatory while others are optional. The optional courses are designated as open options and/or academic divisional options. These are defined as follows:

"**Air Force Academy cadets just have to remember no matter where they stand, they're always on top.**"
--Cadet Joseph D. Abel, Class of 1988

Open Option: Any graded course under supervision of the Dean of the Faculty for which at least two semester hours credit is awarded. Open options also include Aviation 470, 471, 490, 495, and 499, under the supervision of the Commandant of Cadets; Physical Education 440, 460, 495, and 499 under the supervision of the Director of Athletics.

Academic Divisional Option: Any course unit from the offerings of the Basic Sciences, Engineering, Humanities or Social Sciences Divisions.

Aeronautical Engineering Major

Administered by the Department of Aeronautics

In the Aeronautical Engineering major sequence of courses, you will study aircraft flight mechanics, propulsion, aerodynamics and structures. You may emphasize aircraft or propulsion design. Cadets who successfully complete this major receive the Bachelor of Science in Aeronautical Engineering degree, which is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

In addition to the core curriculum, the following courses are required for the major:

Aero 356.	Flight Mechanics I
Aero 366.	Propulsion I
Aero 371.	Aerodynamics I
Aero 372.	Aerodynamics and Design
Aero 377.	Analytical and Numerical Methods in Aeronautics
Aero 450.	Aeronautical Laboratory
Aero 453.	Aerothermodynamics
Aero 471.	Aerodynamics II

Aero Option: Any one course offered by the Department of Aeronautics not otherwise required to satisfy the Aeronautical Engineering major or Math 351 if Math 355 is not taken as a core substitute for Math 211.

Design Option: Two course units of either Aircraft Design (Aero 464) or Propulsion Design (Aero 466)

Astronautical Engineering Major

Administered by the Department of Astronautics

The Air Force Academy has offered America's only undergraduate degree in "pure" space engineering since 1965. The program emphasizes orbital dynamics, space vehicle design, and control systems to prepare graduates for service as researchers, designers, and operators on humanity's most exciting frontier. Graduates receive the Bachelor of Science in Astronautical Engineering degree, which is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

In addition to the core curriculum, the following courses are required for the major:

Astro 360.	Space Vehicle Systems
Astro 451.	Astrodynamics
Astro 452.	Linear Control Systems Analysis and Design
Astro 468.	Aerospace Vehicle Systems Design
Engr 350.	Linear Systems Analysis and Design
Engr 351.	Aerospace Engineering Techniques
Math 351.	Applied Differential Equations

Two courses from a list of Engineering options approved by the advisor

Design Option: Astro 470, Space Mission Design, or Astro 475, Digital Control Theory and Design

One 300- or 400-level course from the offerings of the Engineering Division or the Basic Sciences Division

Wind tunnel test.

"The Academy was a very essential step. While at the Academy, I was interested in aeronautical engineering and I stuck with that,..."
--Lt Col Loren Shriver, 1967 USAFA Grad and NASA Shuttle Astronaut

Basic Sciences Major

Administered by the Basic Sciences Division

The major in Basic Sciences is for the student with an interest in the broad scope of science. It allows you to sample a range of scientific areas with a limited degree of specialization in the area of most interest to you. Departmental options must be chosen from offerings of the Departments of Chemistry, Computer Science, Biology, Mathematical Sciences and Physics. The science options are courses selected from the basic sciences and engineering fields, including a total of 12 disciplines.

In addition to the core curriculum, the following courses are required for the major:

One course from the offerings of each of the five departments in the Basic Sciences Division
One additional Basic Sciences Division course
Two science courses from Basic Sciences or Engineering Division
One academic divisional option

"Rat Olympics" stresses principles of learning.

Behavioral Sciences Major

Administered by the Department of Behavioral Sciences and Leadership

The major in Behavioral Sciences helps you understand human motivation and behavior. It provides a strong basis for continuing development as a military leader. The major is divided into three areas of emphasis: psychology, organizational behavior, and human factors engineering. The factual knowledge and concepts developed are contemporary in scope and of particular importance to the education of all officers in operational command positions and those contemplating a career in behavioral science research, human factors engineering, personnel psychology, social actions, clinical psychology, and organizational behavior.

In addition to the core curriculum, the following four courses are required for all areas of emphasis in this major:

Beh Sci 331.	Basic Research Design and Statistics
Beh Sci 332.	Advanced Research Design
Beh Sci 352.	Social Psychology
Beh Sci 435.	Theories of Learning

There are different course requirements for each area:

1. *Psychology*

Beh Sci 380.	Theories of Personality
Beh Sci 385.	Abnormal Psychology
Beh Sci 450.	Biopsychology
Beh Sci 490.	Counseling and Group Dynamics
Beh Sci 495.	Special Topics

Two open options

2. *Organizational Behavior*

Beh Sci 377.	Organizational Behavior and Industrial Psychology
Beh Sci 464.	Organizational Development
Beh Sci 495.	Special Topics
Mgt 361.	The Management of Human Resources
Mgt 446.	Organizational Theory

Two open options

"It is difficult to see the picture when you are inside the frame."
--R. S. Trapp

3. *Human Factors Engineering*

Beh Sci 373. Human Factors Engineering: Concepts and Theory
Beh Sci 374. Human Factors Engineering: Applications and Evaluation
Beh Sci 377. Organizational Behavior and Industrial Psychology
Beh Sci 450. Biopsychology
Beh Sci 471. Engineering Psychology and Human Performance
Two open options

Other course offerings:

Beh Sci 499. Independent Research

Examining cultures in biology lab.

Biology Major

Administered by the Department of Biology

The Biology major is recommended for the student who possesses both the aptitude and an interest in any area of the biological sciences. This major promotes the development of the cadets' natural scientific talents through a carefully planned program of academic instruction, practical laboratory experience, and individual research projects. Specialized tracks within the biology major provide for a multidisciplinary approach to the study of environmental sciences and the human performance aspects of high altitude/high speed flight including space flight. By selection of the appropriate track, prerequisites for entry into medical or graduate school and for admission into biologically-oriented career fields within the Air Force may also be attained. In keeping with the mission of the Air Force Academy, the biology major provides cadets with the knowledge, character and motivation essential for career Air Force leadership.

In addition to the core curriculum, the following courses are required for the major:

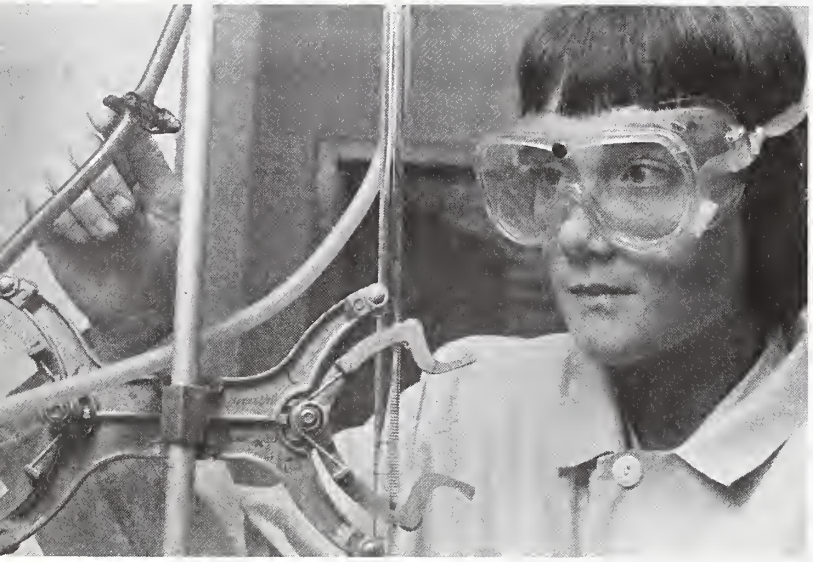
Biology 330. Basic Biological Science I
Biology 331. Basic Biological Science II
Biology 363. Genetics
or
Biology 431. Microbiology
or
Biology 460. Cell and Molecular Biology
Biology 380. Ecology
Biology 383. Human Anatomy
or
Biology 447. Physiology
Biology 480. Research Analysis
Three basic sciences divisional options; one open option

"In nature we never see anything isolated but everything in connection with something else."
--Johann Wolfgang von Goethe

Chemistry Major

Administered by the Department of Chemistry

The major in Chemistry is recommended if you are interested in chemical or biochemical research or applications. It provides fundamental knowledge in analytical, inorganic, organic, and physical chemistry and allows you to select one or two of these areas for advanced study. The major prepares you for a junior officer position in research, development, or graduate training. It emphasizes the use of laboratory methods for reinforcement of lecture material and individual research projects. Cadets successfully completing this major receive the Bachelor of Science in Chemistry degree.



Working in the chemistry lab.

In addition to the core curriculum, the following courses are required:

Chem 233-234. Organic Chemistry I and II
Chem 243-244. Organic Chemistry I and II Lab
Chem 335-336. Physical Chemistry I and II
Chem 345-346. Physical Chemistry I and II Lab
Chem 431. Theoretical Inorganic Chemistry
Chem 453. Instrumental Methods of Chemical Analysis
One science course unit selected with approval of the faculty advisor

This sequence fulfills the recommendations of the Committee on Professional Training of the American Chemical Society. Cadets in this major should take German or Russian to satisfy the core language requirement.

An alternate sequence in general chemistry reduces the number of laboratory courses and is designed for students wishing to combine an emphasis in chemistry with advanced courses in other disciplines. While this sequence does not fulfill the requirements for the Bachelor of Science in Chemistry specified by the American Chemical Society, it does allow a degree in an interdisciplinary program tailored to various Air Force careers.

In addition to the core the following are required:

Chem 233-234. Organic Chemistry I and II
Chem 243. Organic Chemistry Lab
Chem 335-336. Physical Chemistry I and II
Chem 345. Physical Chemistry Lab
One of the following courses:
Chem 222. Analytical Chemistry
or
Chem 224. Organic Chemistry Lab
or
Chem 346. Physical Chemistry Lab
or
Chem 453. Instrumental Methods of Chemical Analysis
Any 400-level chemistry course
Two science options; one open option

Civil Engineering Major

Administered by the Department of Civil Engineering

The major in Civil Engineering stresses the fundamentals common to the many areas of the civil engineering profession. The major prepares you for duty in the Air Force with some specialization in the civil engineering discipline including research, development, design, and construction of facilities to support manned and unmanned weapons systems and the space program. The major provides excellent preparation for graduate study in any of the branches of civil engineering. Cadets successfully completing this major receive the Bachelor of Science in Civil Engineering degree, which is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

In addition to the core curriculum, the following courses are required for the major:

Civ Engr 350. Materials Design Laboratory
Civ Engr 361. Fundamental Hydraulics
Civ Engr 372. Behavior and Analysis of Structures
Civ Engr 375. Behavior and Design of Concrete Members
Civ Engr 462. Introduction to Environmental Engineering

Civ Engr 472. Behavior and Design of Steel Members
Civ Engr 480. Construction Management and Contracting
Civ Engr 490. Introduction to Soil Mechanics
One design option from one of the following courses:
Civ Engr 454. Analysis and Design for Structural Dynamics
Civ Engr 463. Wastewater Treatment Plant Design
Civ Engr 473. Structural Design
Civ Engr 481. Air Base Comprehensive Planning and Design
or
Civ Engr 491. Foundation Design
One math option from one of the following courses:
Math 330. Fourier Analysis, Laplace Transforms and Applied Vector Analysis
Math 341. Introductory Numerical Analysis
Math 343. Computational Matrix Algebra
Math 351. Applied Differential Equation
or
Math 455. Advanced Engineering Mathematics
A science option is any academic course of at least one course unit offered by the Basic Sciences or Engineering Divisions which has not been used to satisfy other curriculum requirements. Geog 353 (geomorphology) may be used to fill this option, Math 130 may not.

Demonstrating a freshman-designed engineering project.

You'll pick up more than "bytes" of info in an Academy Computer Science major.

Computer Science Major

Administered by the Department of Computer Science

The major in Computer Science provides a broad background in computer theory, programming, languages, systems, and applications. The major produces officers highly qualified in the rapidly growing areas of computer research, computer management, and the application of computers to complex scientific, engineering, information, and management problems.

In addition to the core curriculum, the following courses are required for the major:

Comp Sci 351. Computer System Organization
Comp Sci 359. Programming Languages
Comp Sci 380. Algorithms and Data Structures
Comp Sci 453. Systems Analysis and Design I
Comp Sci 454. Systems Analysis and Design II
Comp Sci 463. Data Base Management
Comp Sci 467. Computer Networks and Communication
One computer science option from the following courses:
Comp Sci 495. Special Topics
Comp Sci 499. Independent Study
Any computer science track course which is not part of the cadet's track requirements; any outside option
One outside option from the following courses:
El Engr 380. Modern Logic Design
El Engr 487. Real-Time Computation
El Engr 488. Microprocessor Systems
Mgt 364. Operations Research/Management Science II
Math 341. Introductory Numerical Analysis
Math 358. Statistics

Math 363. Operations Research/Management Science I
Philos 370. Introduction to Symbolic Logic
A track option from a two-course sequence in one of the following tracks:

1. *Management Applications*
Comp Sci 362. Computer Simulation
Math 363. Operations Research/Management Science I

2. *Scientific Applications*
Comp Sci 473. Embedded Computer Systems
Comp Sci 474. Small Computers and Computer Graphics

3. *Systems Software*
Comp Sci 483. Operating Systems
Comp Sci 484. Programming Systems
One course unit of flight core

Economics Major

Administered by the Department of Economics

The major in Economics enables you to perform economic analysis, especially of resource allocation problems associated with national security. The major is constructed on a solid foundation of economic theory and is extended by training in quantitative analysis techniques and by study in alternative specialized fields of the economics discipline.

In addition to the core curriculum, the following courses are required for the major:

Econ 333. Price Theory
Econ 347. Quantitative Economic Methods
Econ 356. Macroeconomic Theory
Econ 465. Introduction to Econometrics
Econ 478. Seminar in Defense Economics
Five course units approved by the major advisor
One open option

"Economics is a method rather than a doctrine, an apparatus of the mind, a technique of thinking which helps its possessor to draw correct conclusions."
--John Maynard Keynes

Electrical Engineering Major

Administered by the Department of Electrical Engineering

The Electrical Engineering major provides an opportunity to study the electrical and electronic generation, transmission, and processing of information. The major emphasizes fundamental concepts which find wide application in Air Force weapons and support systems. This program is of particular value if you wish to pursue an Air Force career in operations, communications-electronics, or research and development. Cadets who successfully complete this major receive a Bachelor of Science in Electrical Engineering degree, which is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

In addition to the core curriculum, with El Engr 340 as a substitute for El Engr 310,

The Double E major is enlightening.

and Math 357 as a substitute for Math 220, the following courses are required for the major:

El Engr 341. Electronics I
El Engr 344. Circuits and Systems II
El Engr 346. Linear Systems Analysis
El Engr 350.* Laboratory Techniques I
El Engr 351.* Laboratory Techniques II
El Engr 352.* Laboratory Techniques III
El Engr 443. Electromagnetics
El Engr 464. Design Project
Math 330. Fourier Analysis, Laplace Transforms, and Applied Vector Analysis
Three electrical engineering options and one science option (one course unit offered by the Basic Sciences or Engineering Divisions) subject to advisor approval
*Three one-semester-hour labs

the developmental engineering career field, and is an excellent foundation for graduate education in a variety of fields. Cadets who successfully complete this major receive the Bachelor of Science in Engineering Mechanics degree, which is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology.

In addition to the core curriculum, the following courses are required for the major:

Math 351. Applied Differential Equations
Mech 320. Dynamics
Mech 331. Aerospace Structural Mechanics
Mech 332. Aerospace Structural Design
Mech 352. Mechanical Properties of Materials

Engineering cadets study another kind of stress.

Engineering Mechanics Major

Administered by the Department of Engineering Mechanics

The major in Engineering Mechanics provides engineers with a broad base of knowledge in the fundamentals of engineering with depth in the areas of dynamics, aircraft and spacecraft structural analysis and design, and materials engineering. The major provides the background necessary for duty in

Mech 461. Experimental Mechanics
Mech 462. Engineering Design
Mech 466. Fluid Mechanics
Two Mech options in one of two sequences:

1. *Structures Sequence*
Mech 420. Vibrations
or
Mech 482. The Finite Element Method in Mechanics
Mech 432. Matrix Structural Analysis

2. *Materials Sequence*
Mech 342. Introductory Metallurgy
Mech 451. Physical Metallurgy
One course from the offerings of the Basic Sciences or Engineering Divisions

"The superior man does what is right, the lesser man does what pays."
--Confucius

An engineering project to help the handicapped.

Engineering Sciences Major

Administered by the Department of Engineering Mechanics

The Engineering Sciences major is an interdisciplinary course of study in the fundamentals underlying all engineering disciplines. The curriculum also includes a three-course design experience in one of nine areas of specialization from the fields of Aeronautical, Astronautical or Electrical Engineering or Engineering Mechanics. Cadets who successfully complete this major receive the Bachelor of Science in Engineering Sciences degree, which is accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology. Engineering Sciences graduates are qualified to serve in the developmental engineering career field and are well prepared for graduate study in a variety of engineering fields.

In addition to the core curriculum, the following courses are required for the major:

Aero 356.	Flight Mechanics I
or	
Aero 366.*	Propulsion I
Aero 371.	Aerodynamics I
Astro 452.	Linear Control Systems Analysis and Design
or	
Astro 360.*	Space Vehicle Systems
El Engr 341.*	Electronics I
or	
El Engr 360.	Instrumentation Systems
Engr 350.	Linear Systems Analysis and Design
Math 351.	Applied Differential Equations
Mech 320.	Dynamics
Mech 331.	Aerospace Structural Mechanics

A two course unit design sequence in one of the following areas: Aircraft Vehicles, Propulsion, Control Systems, Space Vehicles, Computer Design, Electronics, Aerospace Structures, Experimental Mechanics, Materials. When a Design Option sequence specifies a "science option", the cadet may satisfy this requirement by taking any one course unit offered by the Basic Sciences or Engineering Divisions as long as that course has not been used to satisfy another curriculum requirement.

*These optional courses permitted only in specific Design Option sequences

General Engineering Major

Administered by the Department of Civil Engineering

The General Engineering major provides a broad technical background as preparation for service in one of the Air Force engineering or technical specialties that does not require a disciplinary engineering degree, and specialization in the engineering discipline, but in less depth than in the disciplinary or Engineering Sciences major. Future graduate studies in an engineering discipline will usually require additional undergraduate preparatory courses.

In addition to the core curriculum, the following courses are required:

Nine course units of majors' courses are required as follows:

Three departmental options from any course (excluding core or core substitute) offered in the Engineering Division. Each departmental option must be selected from a different department in the Engineering Division.

Four engineering options from any course (excluding core or core substitute) offered in the Engineering Division. There is no required distribution of courses from each department

One mathematical science option from any course (excluding core, core substitute or Math 130) offered by the Department of Mathematical Sciences

One science option from any course (excluding core or core substitute) offered in the Basic Sciences or Engineering Divisions

Geography Major

Administered by the Division of Social Sciences (Office of Instruction for Geography)

The major in Geography provides an understanding of the complex geographic relationships in the world today. Built on a foundation in both cultural and physical geography, the major offers a concentration in physical, cultural, or regional geography. The geography major is of particular value if you are contemplating an Air Force career in operations planning, foreign area analysis or intelligence.

A cadet uses a stereoscope in cartography class.

In addition to the core curriculum, the following courses are required for the major:

Geog 320.	Principles of Geography
Geog 340.	Cartography
or	
Geog 382.	Geographic Application of Imagery Analysis
Geog 342.	Analytical Techniques in Geography
Geog 350.	Cultural Geography
or	
Geog 370.	Political Geography
or	
Geog 372.	Economic Geography
Geog 352.	Climatology
or	
Geog 353.	Geomorphology
Geog 471.	Western Europe and the Mediterranean
or	
Geog 472.	USSR and Eastern Europe
or	
Geog 475.	Geography of the Developing World/ East Asia and Latin America
Geog 491.	Seminar on Basis of Geographic Thought and Research

Three additional course units in geography or offerings related to cadet's area of concentration with approval of faculty advisor

One open option

"Military operations are drastically affected by many considertions, one of the most important of which is the geography of a region."
--General Dwight D. Eisenhower

History Major

Administered by the Department of History

The History major helps you understand the world and its problems by studying the ideas and forces of the past that have shaped the present. The knowledge imparted and the perspective developed are important to the education of the professional Air Force officer and are particularly valuable for careers in operations, plans, attache duty, and intelligence. Because the major emphasizes the development of historical judgment, research techniques, writing skills, and critical thinking, it is excellent management and leadership training for junior officers aspiring to future staff and command positions.

In addition to the core curriculum, the following courses are required for the major:

History 330. Historical Methods
History 351. U.S. History to World War I
One European History option
One Military History/Area History option. Area track will take applicable Area History; Military, General and American tracks will take History 494.
Two open options
Seven course units from one of the following areas of concentration: Military History; General History; American History; Area History.

Humanities Major

Administered by the Humanities Division

With a Humanities major, you'll sharpen writing, reading and speaking skills, deepen your sensitivity to philosophical inquiry and ethical conduct; and grow in your understanding of literature and fine arts. The major provides excellent leadership training for any future Air Force officer, including those contemplating careers in flying, weapons control, missiles, maintenance, logistics, law and intelligence--in short, any field that demands leadership capable of dealing with the human and technological complexities of an Air Force in the twenty-first century.

In addition to the core curriculum, the major requires the following courses:

One course unit in English from the Department of English
One course unit in history from the Department of History
One course unit in philosophy from the Department of Philosophy and Fine Arts
One course unit in fine arts from the Department of Philosophy and Fine Arts
One course unit in foreign language may be fulfilled in any of three ways: a full year of 100-level studies in a second foreign language (other than core); one semester of intermediate studies beyond the core; one semester of literature in translation (Hum 461/463).
Three humanities division options; one open option

Sometimes history isn't serious.

International Affairs Major

Administered by the Department of Political Science

The major in International Affairs provides future Air Force officers with a comprehensive understanding of the substance and process of politics and public policy. Courses in the major focus on the international political system, comparative politics, political theory policy-making processes and American government. This major provides a foundation that will help an officer in a broad range of fields especially those requiring an officer with a generalist perspective combined with highly developed skills in research and analysis. This major is particularly suited for those who desire to develop careers in operations, plans, intelligence, politico-military affairs, the law, attache duty, and foreign military assistance.

In addition to the core curriculum, the following courses are required for the majors:

Eleven course units in one of the following areas of concentration: International Politics; Area Studies; National Security Policy; or American Politics

"The price of greatness is responsibility."
--Winston Churchill

Management Major

Administered by the Department of Management

The major in Management produces a critical thinker, equipped with both the cognitive and noncognitive skills that enable you to operate effectively as an Air Force officer and manager. Decision making is the focal process and a primary objective is to enhance your ability to integrate knowledge and act creatively and sensitively under conditions of ambiguity, risk, and stress.

In addition to the core curriculum, the following courses are required for the major:

Mgt 341. Fundamentals of Accounting
Mgt 360. Introduction to Management Science
Mgt 361. Management of Human Resources
Mgt 432. Managerial Accounting
Mgt 446. Organization Theory
Mgt 472. Administrative Policy and Strategy
Mgt 491. Management Informations Systems
Three course units related to management with approval of faculty advisor
Open option

One of the largest Academy majors is Management.

Mathematical Sciences Major

The major in Mathematical Sciences provides a thorough background in the techniques of analyzing and solving the complex operations, management, and mathematical problems of today's modern Air Force. Courses in operations research, applied mathematics, and analysis provide depth of education in these basic areas. Elective courses in other disciplines stress mathematical applications. The program provides excellent preparation and flexibility of choice for entering Air Force Institute of Technology (AFIT) graduate degree programs in engineering, operations research, the physical sciences, and mathematics.

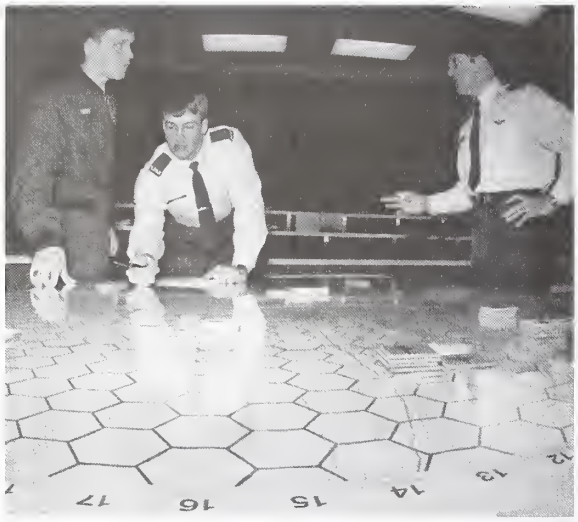
In addition to the core curriculum, the following courses are required:

Math 320. Foundations of Mathematics
Math 341. Introductory Numerical Calculus

"God made integers, all else is the work of man."
--Leopold Kronecker

Math 351.	Applied Differential Equations (If Math 355 is substituted for Math 211 in the core, then a differential equations course more advanced than Math 351 must be taken.)
Math 357.	Probability and Statistics (If Math 357 is substituted for Math 220 in the core, then an open option may be selected.)
Math 460.	Linear Algebra
Math 466.	Advanced Calculus I
Math 467.	Advanced Calculus II
or	
Math 451.	Complex Variables

Four math options or four science or engineering options



Operations Research includes lessons in airpower application.

Operations Research Major

Administered jointly by Computer Science, Economics, Management, and Mathematical Sciences Departments

The major in Operations Research provides the academic background necessary for duty as an Air Force scientific analyst, as well as for graduate studies in operations research and systems analysis. This interdisciplinary program will appeal to the student who enjoys problem solving and decision making and who wishes to prepare to analyze the complex issues in operations, plans, research, and system development so prevalent in today's Air Force.

In addition to the core curriculum, the following courses are required (Math 357 should be substituted for Math 220 in the core):

Comp Sci 340.	Structured FORTRAN for the Scientist/Engineer
Comp Sci 362.	Computer Simulation
Econ 465.	Introduction to Econometrics
Econ 466.	Seminar in Econometrics
Math 343.	Computational Matrix Algebra
Math 357.*	Probability with Statistics
Math 358.	Statistics
Math 363.	OR/MS I
Mgt 364.	OR/MS II

One OR option
One Capstone OR/MS option
*An open option must be taken if Math 357 is substituted for Math 220

Physics Major

Administered by the Department of Physics

The major in Physics concentrates on basic physical principles and mathematics. It provides an excellent academic background for a wide range of technical assignments within the Air Force, particularly in the field of research and development. It also provides a sound basis for graduate work in physics, space science, related applied sciences, and a wide variety of engineering science disciplines. The major is divided into three areas of emphasis: physics, space physics, and engineering physics.

In addition to the core curriculum, with Physics 363 as substitute for Physics 410/420, the following courses are required for the major:

Math 351.	Applied Differential Equations
or	
Math 355.	Ordinary Differential Equations with Applications
Physics 357.	Classical Mechanics I
Physics 358.	Classical Mechanics II

Physics 364. Introduction to Modern Physics II
Physics 441. Laboratory Techniques
Physics 461. Electromagnetic Theory I

and the courses listed under one of the three areas below:

1. *Physics*

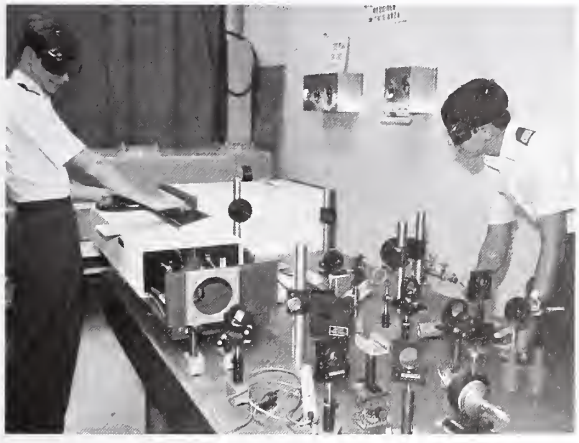
Math Option.
Physics 365. Thermal and Statistical Physics
Physics 442. Advanced Physics Lab
Physics 459. Quantum Mechanics
Physics 462. Electromagnetic Theory II

2. *Space Physics*

Math Option
Physics 370. Introduction to Space Physics
Physics 392. Plasma Physics
Physics 453. Planetary Interactions
or
Physics 486. Astrophysics
One additional course from the following: Astro 451, Physics 454, 480, or 486

3. *Engineering Physics*

Math 455. Advanced Engineering Mathematics
An approved four-course design sequence in engineering or a related science, normally taught by a department other than the physics department.



Cadets test a physics project.

Social Sciences Major

Administered by the Social Sciences Division

The major in Social Sciences is designed for the cadet whose interests and abilities lie in the area of the social sciences but who prefers a broader background than a major in only one discipline would provide. The major requires completion of at least one course, as indicated below, beyond the core in each of the following disciplines: economics, geography, management, political science, law, and behavioral science. More concentrated study in one discipline may be attained through the use of academic divisional options.

In addition to the core curriculum, the following courses are required for the major:

Geography is one of six disciplines in the Social Sciences major.

Geog 320. Principles of Geography

One economics course from the following options:
Econ 333. Price Theory
Econ 351. Comparative Economic Systems
Econ 356. Macroeconomic Theory
Econ 374. Survey of International Economic Issues

One management course from the following options:
Mgt 341. Fundamentals of Accounting
Mgt 360. Introduction to Management Sciences
Mgt 361. Management of Human Resources
Mgt 446. Organization Theory
One course unit in political science
One course unit in law
One course unit in behavioral science
Two social science options
One open option

"It is not titles that honor man, but man that honors titles."
--Niccolo Machiavelli

Space Sciences Major

Administered by the Department of Astronautics

Space Sciences majors graduate with an understanding of contemporary problems and issues peculiar to space. Courses in astronautics, physics, electrical engineering, computer science, mathematics, and other disciplines provide the breadth of education required for service on the "high frontier." This interdisciplinary program appeals to students preparing for space-related careers. In addition to the core curriculum, the following courses are required for the major:

Astro 360.	Space Vehicle Systems
Astro 451.	Astrodynamics
Astro 470.	Space Mission Design
Comp Sci 340.	Structured FORTRAN for the Scientist/Engineer
El Engr 360.	Instrumentation Systems
Math 310.	Mathematical Modeling
Physics 370.	Introduction to Space Sciences

One analytical methods option from the following courses:

Engr 351.	Aerospace Engineering Techniques
Geog 340.	Cartography
Geog 382.	Geographic Application of Imagery Analysis
Mgt 360.	Introduction to Management Science
Math 343.	Computational Matrix Algebra
Math 351.	Applied Differential Equations
Physics 480.	Astronomical Techniques

One social sciences option from the following courses:

Beh Sci 373.	Human Factors Engineering: Concepts and Theory
Econ 356.	Macroeconomic Theory
Law 461.	International Law
Mgt 485.	Systems Acquisition and Management
Pol Sci 385.	Public Administration

One space sciences option from any 300- or 400-level course from the offerings of the Basic Sciences or Engineering Divisions

One open option from any 200-, 300- or 400-level course offered in the four academic divisions

You'll learn how to work in space in this major.

"Life without inquiry is not worth living for a man."
--Socrates

Each Academy department determines its honors program.

The Academic Honors Program

All academic departments offer honors versions of core courses to cadets who qualify for more in-depth study of the course material. Additionally, each academic division offers one integrated divisional honors seminar which relates to each discipline in the division.

Each department determines specific selection criteria, although a minimum GPA of 3.0 normally is required for core honors courses. However, special permission may be granted by the appropriate department head.

Participation in core honors courses is voluntary, and cadets may return to the corresponding core course voluntarily or by direction by a prescribed point during the semester.

You may qualify to have an "honors" designation on your bachelor of science degree if you complete the following requirements:

51 semester hours of core honors courses with at least nine semester hours selected from core courses in each of the four academic divisions One integrated divisional honors seminar 3.0 cumulative GPA and 3.5 GPA in all honors courses

If you choose to take honors courses you will acquire an excellent background for future graduate education. The Summary of the Curriculum lists all of the core courses which have honors sections.

The Enrichment Program

When you first enter the Academy, you must take a battery of placement/validation tests offered by the various academic departments. Based on these tests, you will be enrolled into your first semester courses according to your individual ability, preparation, and achievement. During your years at the Academy, you may participate in the enrichment program in the following ways:

"All things are difficult before they are easy."
--John Norley

Transfer Credit

You may transfer college credits for any course satisfactorily completed if the Academy offers a corresponding course. This allows you to substitute other courses for those omitted through transfer credit.

Validation

You may have gained special competence through honors courses in high school, through College Board advanced placement tests, or other experience that will enable you to pass validation examinations to satisfy the requirements for Academy courses. All new cadets take English, foreign language, history, chemistry and math placement or validation tests. You may choose a substitute elective for a course satisfactorily validated.

Acceleration

If you have special preparation or above-average ability in a subject, you may be placed in accelerated courses which complete the requirements for a two-course sequence in one semester.

Advanced Placement

If you have special preparation or above-average ability, you also may be placed in an advanced course of a multicourse sequence. Upon successful completion of the advanced course, you receive validation credit for prior courses in the sequence. Such placement is currently accomplished in core mathematics courses.

Substitution

Advanced course versions are offered as substitutes for some of the prescribed courses. They allow you to concentrate on a subject in greater depth or to satisfy requirements for a particular major.

Overload

If you maintain a 2.60 GPA, you may enroll in one course beyond the normal semester requirement. If you maintain a 3.25 GPA, you may enroll in two courses beyond the normal semester requirement. This allows you to have a wider latitude in your course selection.

"Unless you try to do something beyond what you have already mastered, you will never grow."
--Ronald E. Osborn

Audit

First- and secondclass cadets who maintain a 2.60 GPA may audit one course beyond the normal semester requirement. However, you may not take an overload course in addition to an audit course. Cadets who maintain a 3.25 GPA may audit one course and overload another course. You are not required to take examinations in the audit courses. Audited courses will not appear on transcripts.

Because of federal statutes, you may not graduate in less than four years. The enrichment program, however, encourages you to take additional courses in your major field of interest, or to take diverse elective courses.

The program encourages individual initiative. Each academic department offers upperclass cadets an independent study course consisting of research work by cadets on topics of their own choosing. Term papers and laboratory experiments provide other

opportunities for you to engage in your own research.

Every effort is made to keep the content of courses up-to-date and abreast of current developments. To cover contemporary topics or provide special courses requested by cadets, each academic department may offer a course called special topics. The content of these courses may change from semester to semester, and may cover a wide range of topics.

Foreign Exchange Programs

The Air Force Academy currently has exchange visits of one to two weeks with the Air Force academies of Argentina, Australia, Belgium, Brazil, Canada, Federal Republic of Germany, Great Britain, Japan, Mexico, the Netherlands, Portugal, Saudi Arabia and Spain.

A more extensive exchange program with France includes student participation in the academic, military, and athletic activities of the host academy for a semester. Each fall semester up to eight cadets from the Air Force Academy exchange places with cadets from the Ecole de l'Air (French Air Force Academy).

Sprechen Sie Deutsch?

Interservice Exchange Program

The Air Force Academy has exchange programs with the United States Military Academy, the Naval Academy, and the Coast Guard Academy. During one semester, small groups of Air Force cadets attend the other academies, while the Air Force Academy reciprocates by receiving the same number of cadets from those schools. This exchange provides future military leaders with a better understanding of the other services and develops a degree of uniformity among programs at the academies.

Academy cadets in Spain.

Accreditation

The Air Force Academy is a fully accredited institution of higher learning. The North Central Association of Colleges and Schools accredits the standard bachelor of science degree. The Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology, composed of representatives of the major professional engineering societies, has granted accreditation to the majors in aeronautical engineering, astronautical engineering, civil engineering, electrical engineering, engineering mechanics and engineering sciences. The major in

chemistry fulfills the recommendations of the Committee on Professional Training of the American Chemical Society. Cadets who complete the requirements for one of these majors will earn a specified degree.

The Faculty

A faculty composed primarily of Air Force officers teaches Academy courses. A few officers from the United States Army, Navy, and Marine Corps, and from the military forces of allied nations serve in a liaison capacity. Several visiting professors from civilian colleges and universities and many civilian guest lecturers supplement the military faculty.

An assignment to the Academy faculty is voluntary, and each applicant is normally given a personal interview. Unlike most schools of comparable size and all universities, the Academy does not use graduate students as teacher assistants. Each faculty member must hold a master's degree, and approximately 30 percent have earned doctorates. Faculty members have advanced degrees from such outstanding colleges and universities as Harvard, Stanford and Massachusetts Institute of Technology, as well as from foreign universities such as the University of Heidelberg in Germany and Oxford University in England.

Faculty members normally serve at the Academy for four years. However, the Dean, the Vice Dean, and the 19 department heads serve as permanent professors while up to 10 percent of the faculty are tenure associate professors, with appointments renewed on a recurring four-year basis.

In addition to teaching their particular courses, Academy faculty members help furnish a continuing motivation for cadets to devote a career to the service of their country. They accomplish this goal through precept and example as career officers and qualified faculty members. They maintain close contact with the cadets in the classrooms and as course directors, and serve as sponsors for extracurricular activities and athletics.

Faculty members also participate in local and national meetings of educational and professional societies. Many of them contribute to the literature of their disciplines and to progress in their fields through research projects. All departments use the talents of their best students in their research efforts. Many cadets participated in the six experiments carried aboard the Space Shuttle Flight 6. These experiments, the second set of university experiments to fly on a shuttle flight, were the first to work. During the summer, faculty members often serve other installations of the Air Force as consultants.

Each Academy instructor has at least a master's degree.

Instructional Methods

Faculty members may employ the entire range of teaching techniques including lectures, discussions, demonstrations, tutorials, and seminars. The small size of most Academy classes, usually 15 to 20 cadets, makes the discussion approach practical and popular. The relaxed classroom atmosphere encourages free communication between the instructor and cadets. Instructors also provide extra instruction for those cadets who need it, to develop their understanding of a subject and to improve their grades.

"**Academy instructors start out as strangers, soon become friends by showing cadets how to direct their energies to get the most out of a course.**"
--2nd Lt Michael Peart, Class of 1983

Oral and written quizzes are part of daily academics.

Academic departments use Academy-prepared readings, notebooks, and laboratory guides, as well as commercially published materials. Most of the materials include daily assignments, supplementary reading suggestions and discussion questions.

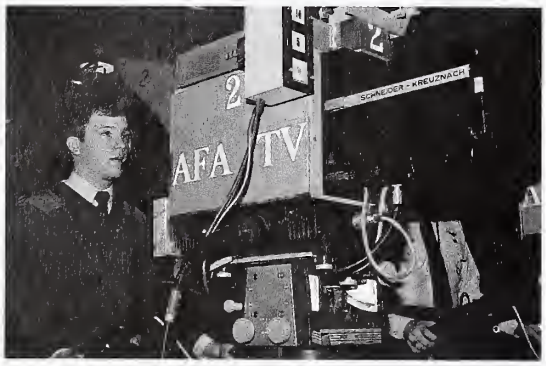
Departments use a variety of testing techniques, ranging from essay questions and themes to short-answer and multiple-choice items. The nature of the subject matter determines the type of test used. Quizzes are given over class materials at the discretion of the individual instructor. Most departments permit the instructor to construct class tests so that a portion of the final grade will come from measuring instruments devised with total freedom by the instructor. In preparing graded reviews and final examinations, most departments use a committee composed of instructors and professors.

Curriculum and Scheduling Services

The Directorate of Curriculum and Scheduling Services administers the entire curriculum. The directorate personnel prepare the academic calendar, publish the curriculum handbook, conduct registration, design the course offering timetable, produce academic schedules, assign classrooms, and schedule final examinations.

Audiovisual Services

The Directorate of Audiovisual Services provides products and services to support all cadet instruction. Among the support resources are libraries of films, slides, audio tapes and photographs. Graphic and photographic personnel prepare a variety of instructional materials and displays for classroom and lab use. Cadets and instructors may use the self-help facility to prepare simple instructional aids.



Cadet communications via "Blue Tube".

Training devices personnel manufacture various three-dimensional models, exhibits and devices for use in lab experiments and classroom demonstrations. Skilled electronics technicians in the precision measurement equipment lab calibrate and repair all precision-measuring instruments and equipment used at the Academy.

The directorate provides a closed-circuit television system to supplement live classroom instruction. This system can televise, in color, up to 12 programs simultaneously to any area in the academic building. Instructors can prepare live or videotaped lessons using several production methods. Audiovisual Services, in conjunction with the English department, instructs a cadet communications course known as "Blue Tube." Cadets present weekly TV news productions for the closed-circuit network.

Directorate personnel teach academic skills courses in reading improvement and typing.

Classrooms and Laboratories

Cadet classrooms are located in Fairchild Hall, the large academic building. Most classrooms accommodate small class sessions. However, eight 46-person rooms and eight 76-person rooms are available when larger classrooms are appropriate to the instruction. These elongated horseshoe-shaped and tiered classrooms provide maximum student-instructor contact. Five large lecture halls are available for assemblies of cadets and for staff and faculty meetings.

The Academy is well-equipped with laboratories. Major facilities in the aeronautics laboratory include a 3'x3' subsonic continuous wind tunnel, a 1'x1' trisonic blowdown tunnel, two J69 and one J85 operational turbojet engines, a rocket test cell, and internal combustion engines. The turbojet engines, which are flown in the T-37 and T-38 trainer aircraft respectively, represent a unique capability for the cadet to operate the actual engines flown in pilot training.

The Department of Astronautics manages two laboratories which contain facilities unique to an undergraduate school. The guidance and control laboratory contains precise inertial instrument test equipment, an airborne weapons control simulator, and a space shuttle simulator for both research and classroom activities. The engineering division laboratory has metal and wood shop facilities, electronic trouble shooting equipment, and a large variety of bench stock components to support several engineering design courses.

The Academy is currently converting its two large foreign language laboratories to a language learning center with computer terminals, interactive video, disc and audio facilities. The Academy plans to lead the country in software development for foreign languages as well as technological sophistication in delivery systems. We feel this combination will give us a qualitative improvement in foreign languages teaching methods.

The Academy Planetarium is a multimedia education and research facility used for cadet instruction in astronomy, naviga-

tion, and related academic disciplines. The projector enables the instructor to simulate a multitude of realistic sky effects on the 50-foot hemispherical star theater. Movements of stars, planets, comets, meteors and satellites can be duplicated for past, present or future time. The planetarium, with a seating capacity of 300, is also used for educational demonstrations to school groups and the general public.

Cadets study astronomy in the Academy Observatory, which houses a 24-inch telescope.

Education and Research Computer Center

Data processing has become an important factor in the modern world, and is a key in the defense of our country. One of the finest undergraduate computer centers in existence supports the cadets, future leaders of the United States Air Force. Almost every academic discipline encourages use of the computer in the educational process. The facilities of the education and research computer center are evaluated and updated annually to ensure state-of-the-art computer support to the Cadet Wing.

Seiler Research Laboratory

The Frank J. Seiler Research Laboratory (FJSRL) is the only scientific lab in the United States Air Force devoted primarily to basic research. Named in memory of the late Colonel Frank J. Seiler, an Air Force research pioneer, the lab conducts research in chemistry, lasers, and aero mechanics, and encourages and supports Academy faculty and cadet research in these disciplines. A resident staff of military and civilian research scientists works closely with faculty members and cadets on projects of interest to the Air Force. An inertial guidance lab, laser lab, and instrumentation for chemical synthesis and analysis are among the research facilities available for use by the FJSRL staff, the faculty and cadets.

Air Force Academy Library

The Academy Library serves the academic, research, and recreational reading needs of the Academy. The library maintains book and periodical collections, scientific and technical report collections, an audio collection, and subscribes to national and international periodicals and newspapers. A major library expansion was completed in 1982. The library's integrated computer system consists of an online catalog, circulation, and acquisition modules.

The Special Collection Branch houses complete archival records on the establishment and growth of the Academy, as well as historically significant materials on the development of the Air Force. The library also maintains a growing collection of historical aeronautical materials.

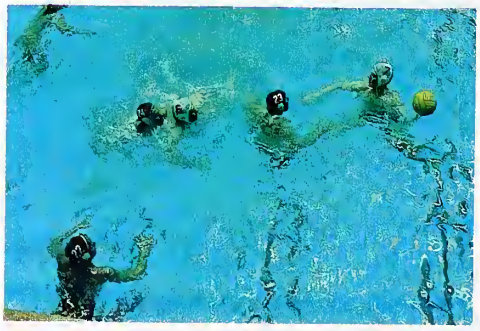
The library's reference collection contains standard and specialized reference works on most subject areas and provides a means for identifying and obtaining research materials that are not owned by the library, including access to on-line data bases.

A staff of professional librarians offers assistance at all times during the 92 hours a week the library is normally open. All new cadets and faculty members receive a complete orientation to the library's collections, facilities and services.

The Academy Library system also operates three branch libraries to serve the needs of the entire Academy population. Also, more than 50 small reference collections are located in academic departments and staff agencies.

ATHLETIC PROGRAM

Physical Education.



Intramurals.

Intercollegiate Athletics.

The athletic program, conducted by the Director of Athletics, makes a vital contribution to your preparation for Air Force leadership. Through your participation in all phases of athletics you will develop:

Skill, confidence, initiative, and teamwork;

Useful habits of physical fitness and conditioning;

Courage, self-control, and the ability to survive in emergencies;

Athletic skills to compete in a variety of sports;

Individual skills for enjoyment of sports after graduation.

Professional physical educators conduct instructional classes during the fall and spring semesters. Instruction improves overall conditioning, teaches aquatic skills, increases combative confidence and exposes you to several carry-over sports for your enjoyment. You will participate in sports activities through intramural contests. You also may try for nationally recognized intercollegiate teams in a variety of varsity sports (10 women's teams and 18 men's teams).

The Academy's athletic facilities are among the finest in the nation. The Cadet Gymnasium has three full-sized gyms; one Olympic swimming pool and another 40-yard pool; courts for squash, handball, tennis, volleyball and basketball; and a rifle and pistol range. The Field House has an ice rink, a basketball court with seating for more than 6,000 spectators, and an indoor Tartan track with Astro-turf infield for all-weather practice. There are also 143 acres of outdoor playing fields and two 18-hole golf courses.

The facilities have been used for the National Sports Festivals, Special Olympics, Colorado High School Easter Races and Summer Sports Camps at times that do not interfere with cadet training.

"The quality of a person's life is in direct proportion to their commitment to excellence, regardless of their chosen field of endeavor."
--Vincent (Vince) T. Lombardi

Physical Education Instruction

You will attend mostly coeducational classes with separate training in certain combative courses. Each year you may select one of the following elective subcourses: basic ice skating, scuba I and II, pistol marksmanship, or aerobic fitness. If you do not meet the minimum aquatic standards you will continue to receive additional swimming instruction instead of an elective option.

Fourthclass Year

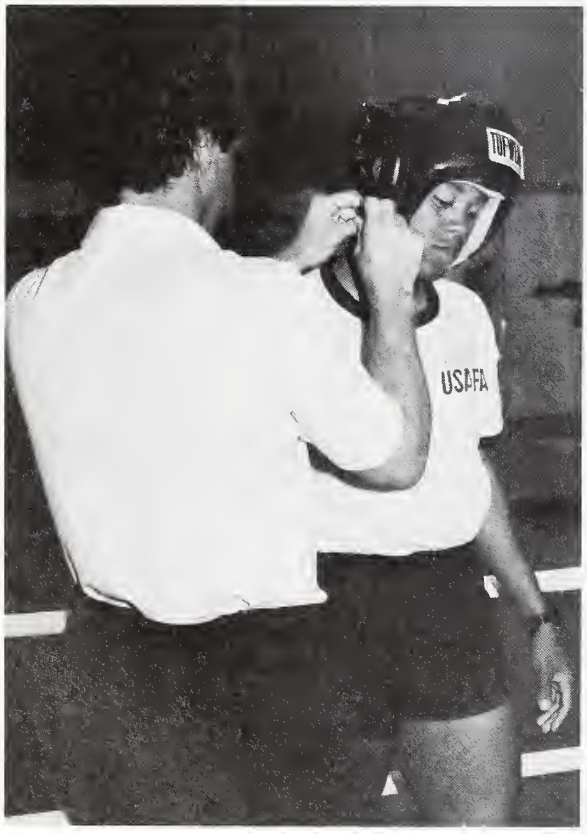
Cadets undergo a vigorous training program to develop physical strength, endurance, flexibility and motor performance. Everyone takes a physical fitness test and a swimming test. If you do not meet the minimum requirements, you will attend remedial instruction. (You should learn to swim before entering the Academy. A distance of 500 feet in five minutes should be a minimum goal.) The summer training includes a progressive series of conditioning exercises and runs, sports activities, and an intersquadron field day. This training prepares you for the strenuous physical education and intramural requirements of the approaching academic year.

Indoors and out, Academy athletics are worth working up a sweat over.

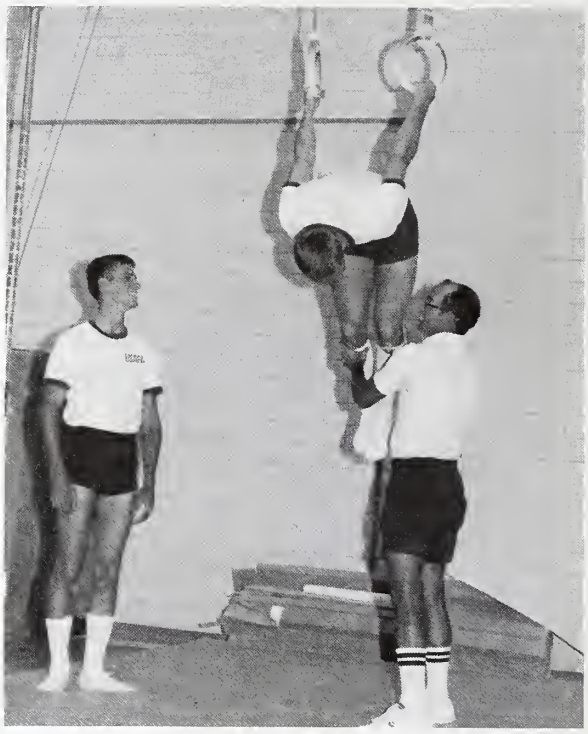
During the fall and spring semesters, the curriculum stresses motor performance, self-confidence and upper-body strength. Women receive instruction in physical development while the men take boxing. All cadets have classes in gymnastics and swimming.

Thirdclass Year

During the last three years at the Academy, the physical education program emphasizes combative courses and lifetime skills to enhance fitness, self-confidence and recreation. All thirdclass cadets receive instruction in tennis and introduction to racquet sports; while women cadets receive instruction in aerobic fitness, and men take wrestling.



Getting ready.



Learning a new trick.

Secondclass Year

Combative instruction in judo emphasizes aggressiveness, self-confidence and body development. A water survival course further enhances your aquatic skills and self-confidence. During this course you will experience several simulated aquatic disasters and emergencies which you might encounter as an Air Force officer. A course in basic golf rounds out the secondclass-year program.

Firstclass Year

Volleyball and physical fitness methods courses continue the progressive development of lifetime activities and physical conditioning. You will complete the self-defense instruction through a multitude of hand-to-hand combative situations in an unarmed combat course.

Giving 100%.

Intramurals

Intramurals are a vital part of the prescribed physical education program and the cadet way of life. All cadets not engaged in intercollegiate athletics or authorized clubs must participate in intramurals. Each of the 40 cadet squadrons fields a team in all 19 intramural sports played during the fall, winter and spring seasons. The squadron with the best intramural record at the end of the school year receives the coveted Malanophy trophy. You will develop physically while gaining experience in both team and individual sports during intramural competition. Cadets expand leadership potential by formulating detailed administrative plans, coaching, and officiating--in effect, managing the entire 760-team intramural program. With the exception of a few contact sports, cadets participate on a coeducational basis in each sport. In addition to the seasonal sports, wing Open Championships are held each spring in boxing, squash, racquetball, and handball. Many of the championship winners go on to capture national honors.

The intramural sports include:

Fall: tackle football, soccer, softball, tennis, and cross country and rugby.
Winter: boxing, wrestling, swimming, handball, basketball, squash, and bowling.
Spring: volleyball, water polo, team handball, flag football, racquetball, and flickerball.

Intercollegiate Athletics

Athletics play an important role in the molding of America's future Air Force officers. If you have exceptional ability, intercollegiate athletics will provide an opportunity to compete against the finest athletes and teams in the nation. This intense level of competition builds a sense of spirit and pride throughout the Cadet Wing.

The intercollegiate program encompasses 28 men's and women's varsity teams competing in more than 500 contests each year. The intercollegiate sports include:

Fall: football, cross country, soccer, water polo, and volleyball.
Winter: basketball, fencing, gymnastics, swimming, wrestling, ice hockey, indoor track, rifle, pistol.
Spring: baseball, golf, tennis, track, lacrosse.

Both men and women cadets compete in tennis, rifle, pistol, track, swimming, cross country, basketball, fencing, golf and gymnastics. Volleyball is played by women only, while football, baseball, soccer, water polo,

There are more than 377,000 square feet of facilities in the cadet gymnasium alone.

wrestling, ice hockey and lacrosse are played by men only.

All cadets participating on an individual or team level are recognized for outstanding achievements and are provided the opportunity to represent the Academy in conference championships, post-season bowl games, tournaments and NCAA championships. Participation in such events reflects the competitive leadership traits desired in future military officers. During the Academy's relatively short period of existence, 221 cadets have been selected for All-America honors for a total of 486 awards, and 25 cadets have won NCAA post-graduate scholarships.

Home football games are played in Falcon Stadium located on the grounds of the Air Force Academy in the foothills of the Rampart Range of the Rocky Mountains. The Air Force Academy Foundation, an organization of national civic leaders, raised the necessary funds to build the 47,000 seat stadium.

In 1980, the Academy became the ninth member of the Western Athletic Conference (WAC). Conference rivalries and yearly contests against Army, Navy, and Notre Dame provide an exciting, highly competitive football season. The 1985 football schedule follows:

Aug 31	Texas, El Paso (H)
Sep 14	Wyoming (A)
Sep 21	Rice (H)
Sep 28	New Mexico (A)
Oct 5	Notre Dame (H)
Oct 12	Navy (A)
Oct 19	Colorado State (A)
Oct 26	Utah (H)
Nov 2	San Diego State (H)
Nov 9	Army (H)
Nov 16	Brigham Young (A)
Nov 23	Hawaii (A)

The other men's teams participating in the WAC are: basketball, cross country, indoor track, swimming, wrestling, baseball, golf, tennis, and outdoor track. In 1982, the women's cross country, track, volleyball, basketball, tennis, and gymnastics teams joined the Continental Divide Conference (CDC). Most teams which do not compete in the WAC or CDC compete in regional leagues.

Cadet participation in intercollegiate competition is financed primarily from sales of tickets to football, basketball, and ice hockey games.

"The highest reward of a person's toil is not what they get for it, but what they become of it."
--John Ruskin

Three straight football bowl wins keep Air Force flying high.

Academy varsity sports provide intense competition.

ADMISSIONS PROGRAM

Inprocessing.

USAFA

Incoming.

Information.

Preparation Guidance

The high admissions standards, the fierce competition for appointments, and the demands placed on cadets at the Academy require thorough preparation if you plan to accept the Academy's challenge. It takes a well-rounded program of leadership, academic, and athletic preparation to be one of the few who can meet the Academy's challenge. Carefully consider the characteristics of dedication, desire to serve others, ability to accept discipline, a sense of duty and morality, and the enjoyment of challenge in deciding whether you want to pursue an Air Force Academy education and a military career. The decision to accept this challenge must be **your own.** Do not let your parents, friends, or others influence you. Outside influence, no matter how well intentioned, seldom provides motivation to meet the challenges you will encounter. You should start preparing early, junior high is not too soon. But, wait until after January 31st of your junior year to begin your official application procedures.

Academic Preparation

A college preparatory high school education provides the best experience for the academic challenges of the Academy. We strongly recommend four years of English, including a college preparatory course in writing; four years of math, with a strong background in algebra, trigonometry, functional analysis and analytic geometry; and four years of basic sciences to better prepare you for the academic expectations of the Academy. Effective with the class entering the Academy in July of 1989, two years of a foreign language (if available at your school) are required. A course in typing would also be helpful since cadets frequently prepare reports, themes, and research papers. Strive for the best grades possible.

"There are three things one needs to succeed at the Air Force Academy. Perserverance, desire, and most of all, a sense of humor."
--Cadet Tom Hogan, Class of 1988

Preparing for the Academy takes time.

Plan to take the ACT or SAT tests more than once, since they provide a large portion of your academic composite. Each of these tests has a slightly different emphasis, so it is advisable to take both tests to see which one measures your educational background most favorably.

Also, work toward developing effective study habits and efficient time management since these qualities are essential in meeting the Academy's academic challenge.

Physical Preparation

Physical fitness is an integral part of Academy life. You'll be tested on your physical fitness during the admissions process when you take the Candidate Fitness Test (CFT). Additionally, during your Academy experience, and particularly in BCT, you'll encounter intense physical demands.

To meet these demands, you should participate in individual and team sports throughout high school. Where possible, these should be organized, competitive sports.

In addition, you should participate in an individual fitness program. Upper-body strength, running speed, and endurance should be your objectives. If you don't already know how to swim, you should learn.

Leadership Preparation

In the leadership portion of the whole-person composite, you are rated on a variety of athletic and nonathletic activities. Quality of involvement rather than quantity is the key. It's better to demonstrate leadership in a few selected activities rather than to be a "joiner" of many. The following chart illustrates percentages of cadets in a typical Academy class and the high school extracurricular positions they held.

Activity	Percentage of Class
Valedictorian	8
Class President	10
Boys/Girls State	20
Scouts	31
National Honor Society	68
Athletic Letter Award	79

"If you're going to bother coming to the Academy, prepare yourself well. Break in your boots, exercise, and come with the attitude that you'll not quit."
--Cadet Thomas C. Guerra, Class of 1988

Physical preparation is a must for Academy admission.

Definitions of Terms

Applicant--An individual expressing an interest in attending the Air Force Academy.

Precandidate--An applicant who has submitted a Precandidate Questionnaire to the Academy.

Nomination--The designation of an applicant as an Academy candidate by a nominating authority.

Nominee--An applicant who has obtained a nomination in an authorized category.

Candidate--A nominee whose name has been recorded by the Director of Admissions.

Qualified Candidate--A candidate who has completed all entrance requirements and meets all qualifying levels.

Appointment--An offer of admission to a candidate.

Appointee--A qualified candidate who has been offered an appointment to the Academy.

Qualified Alternate--A qualified candidate who is not selected for admission from the *best* qualified candidates from each nomination category. The number of appointments needed to fill each class are selected from these remaining qualified candidates.

Cadet--An appointee who has been admitted to the Academy and has taken the oath of allegiance.

Eligibility

To qualify for appointment consideration, you must:

--be at least 17 years old.
--not yet have passed your 22nd birthday on July 1st of the year you enter the Academy.
--be a U.S. citizen (foreign students authorized admission are exempt from the U.S. citizen- ship requirement).
--be of high moral character.
--meet high leadership, academic, physical and medical standards.
--be unmarried, with no dependents.

Admission Criteria

The Air Force Academy evaluates candidates on the basis of numerous academic and nonacademic criteria that are combined to form a "whole-person" score. This composite includes academic and extracurricular segments.

The academic component constitutes the major portion of your whole-person score. This composite includes your SAT or ACT scores, with math counting more heavily than English, and your prior academic record including grades, rank in class, and any college courses you may have taken. Honors and advanced placement courses receive extra credit.

You may compare your SAT and ACT test scores with the average scores of candidates appointed to the Academy in a recent class by referring to the following table:

	Minimum	Mean	Maximum
SAT			
Verbal Aptitude	500	568	800
Math Aptitude	550	651	800
ACT			
English	21	24.7	33
Social Studies	*	26.8	36
Mathematics	24	30.0	36
Natural Sciences	*	30.0	35

*No minimum

Your extracurricular interests are vital in Academy selection procedures.

Talk to a cadet about cadet life.

You may want to take one or both of these tests in your high school junior year or sooner. Then, you may improve on previous scores by retaking the tests in your senior year. These tests are offered on several dates during the fall and winter months. You should take one of them not later than November of your senior year to have your scores included in the final evaluation report the Academy sends to members of Congress in January. When you register for the tests, request your scores be sent to the Air Force Academy. You must have the results of one of these tests in your records to be considered for an appointment. The SAT code number for the Academy is 4830, and the ACT code number is 0530. See your guidance counselor or base education officer for registration procedures and test dates.

The extracurricular component makes up the remainder of the whole-person score. Basically, it measures athletic and nonathletic activities. Some of the athletic indicators are varsity letters earned, all-league or all-state recognition, or selection as a team captain. Nonathletic indicators include leadership in a club, participation in student government, involvement in scouting or the Civil Air Patrol, or an after-school job. Your performance on the Candidate Fitness Test is also included in the extracurricular component.

These criteria assure that the Academy obtains candidates who can manage time and excel in the many aspects of the Academy's challenge.

Precandidate Program

If you believe you meet these requirements, the first step toward becoming a cadet is to request a Precandidate Questionnaire (PCQ) from the Admissions Office. The Academy uses the PCQ to:

--evaluate the qualifications of prospective candidates.

--provide information to members of Congress on potential nominees.

--and schedule those who qualify for medical examinations.

To receive your PCQ, send your request to the Admissions Office at: HQ USAFA/RRS, USAF Academy, Colorado Springs CO 80840-5651. To ensure your name is included in our reports to members of Congress, please return the questionnaire as soon as possible. The latest date you can request a PCQ is January 31st of the year you intend to enter the Academy. If you need assistance in completing the PCQ, ask your guidance counselor for the name of the nearest liaison officer or see page 94 for a list of liaison officer commanders.

If your PCQ information indicates you do not meet our minimum qualifying levels, we will notify you. You can qualify later by submitting higher scores or more current information. If you meet our qualifying levels, you should focus your efforts on obtaining a

nomination. You may apply to the Academy each year until you are accepted or you exceed the age limit.

Nomination Categories

Before you can be accepted into the Academy, the laws governing our admissions process require that you have a nomination. Since the nomination process can be lengthy, you should seek a nomination at the same time you return your PCQ.

To increase your chances of being selected, you should apply for a nomination in each category in which you are eligible. Everyone should write to their U.S. Representative, their two U.S. Senators, and the Vice President. You may also be eligible in various military-affiliated categories. Prepare your letter of application based on the sample formats included in this chapter. The deadline for requesting a nomination in the Vice Presidential category is October 31st. All other categories have an Academy deadline of January 31st. However, many members of Congress do not accept requests for nomination after October, so you should contact them in the spring of your junior year.

An explanation of the various nominating sources follows:

Congressional

The Congressional nomination is the primary one for most candidates. You should submit your request for a Congressional nomination directly to your two U.S. Senators and your U.S. Representative.

To request a nomination from your U.S. Representative, send your request to:

Honorable (your Representative's name)
House of Representatives
Washington, DC 20515

For your Senators, address your request to:

Honorable (your Senator's name)
United States Senate
Washington, DC 20510

No political affiliation is necessary to apply for a nomination. Members of Congress want to nominate outstanding individuals who are competitive for an Air Force Academy appointment.

Entrance to the cadet picnic area.

Each Senator and Representative has considerable latitude in awarding nominations. However, most are based upon some combination of academic achievement, leadership performance, and athletic participation.

Each member of Congress may have a maximum of five cadets attending the Academy at any one time. When one of these five cadets graduates or is disenrolled prior to graduation, a vacancy occurs. For each vacancy, the member of Congress may nominate a maximum of ten candidates. Three methods are available in making these nominations.

The first is the principal/alternate method. The member of Congress nominates a principal candidate who must, by law, be offered an appointment if he or she is a qualified candidate. The remaining nominees are rank ordered according to the member's preference. If the principal nominee does not qualify, then the appointment must be offered to the highest ranked alternate who does.

The second is the principal/competitive method. Members of Congress who use this method designate a principal nominee as in the principal/alternate method. However, if

the principal nominee is not a qualified candidate, the appointment is offered to the best qualified candidate as determined by the Academy.

The third is the fully competitive method. The Academy will offer the appointment to the best qualified candidate.

Other Categories

The same methods of nominating candidates available to members of Congress are also available to the following authorities: Vice President of the United States (he nominates from the U.S. at large), the delegates in the House of Representatives from the District of Columbia, Guam, the U.S. Virgin Islands, and American Samoa; the Panama Canal Commission Administrator; and the Resident Commissioner and Governor of Puerto Rico.

"Progress always involves risk, you can't steal second base and keep your foot on first."
--Frederick Wilcox

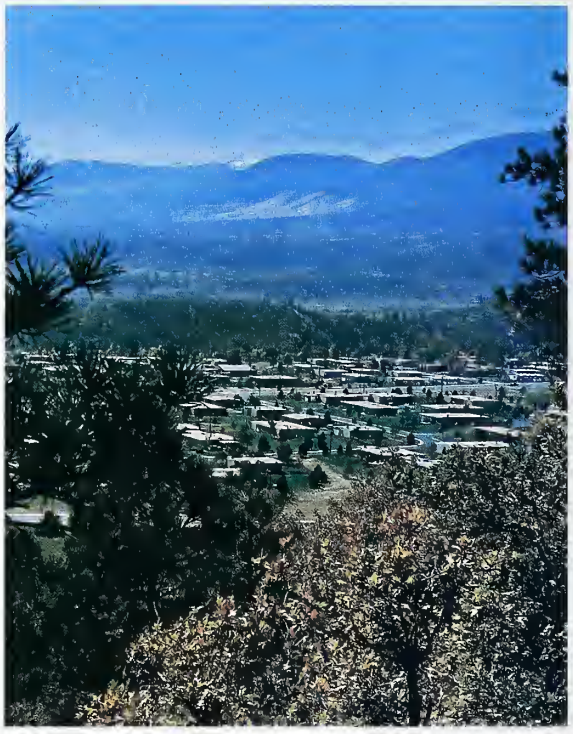
Military Affiliated

If you are eligible to apply in a military-affiliated category, submit the form in the appropriate category described below. If your eligibility is in the Presidential; the Children of Deceased or Disabled Veterans or Children of Military or Civilian Personnel in a Missing Status; or the Children of Medal of Honor categories, follow the sample military-affiliated format included in this chapter. Mail the letter to the Director of Admissions at: HQ USAFA/RRS, .USAF Academy, Colorado Springs CO 80840-5651.

Presidential

This category is reserved for children of career military personnel. To qualify, the parent must meet one of the following criteria:

--Be on active duty and have served continuously on active duty for at least eight years.
--Have retired with pay or have been granted retired or retainer pay. Children of reservists who retired while not on active duty are not eligible.
--Have died after being retired with pay or being granted retired or retainer pay.



Looking over the base housing area.

Children of Deceased or Disabled Veterans or of Military or Civilian Personnel in a Missing Status

The child of a deceased or disabled member of the Armed Forces is eligible if the parent was killed or 100 percent disabled by wounds or injuries received or diseases contracted in active service or from a preexisting injury or disease aggravated by active service.

The child of a parent who is in "missing status" is eligible if the parent is a member of the armed services or a civilian employee in active government service who is officially carried or determined to be absent in a status of missing; missing in action; interred in a

foreign country; captured, beleaguered, or besieged by a hostile force; or detained in a foreign country against his or her will.

Air Force Regular and Reserve Components

Vacancies are available under this category for members of the Regular Air Force, Air Force Reserve, and Air National Guard in accordance with Air Force Regulation 53-10. The application form (AF Form 1786) should be obtained through normal Air Force publications supply channels.

Children of Medal of Honor Recipients

The children of Medal of Honor recipients from any branch of the armed services may apply under this category. The child must meet all the eligibility requirements and be fully qualified to be appointed to the Academy.

Air Force Reserve Officer Training Corps

Five students may be nominated to the Academy every year from each college or university AFROTC detachment as well as from each eligible high school with Air Force Junior ROTC. College or university students must submit their applications to the Professor of Aerospace Studies. High school students must submit their applications to the Aerospace Science Instructor.

Honor Military and Naval Schools

Any school designated by the Departments of the Army and Navy as an honor school may nominate five candidates from among its honor graduates. Applications are provided by the Academy to eligible schools.

Foreign Students

Foreign students from countries selected by the Department of Defense may request a nomination to the Academy through an appropriate official of their own government. The request should contain information about the applicant's potential for success at the Academy. The official's nomination should be received at the Academy by December 31st.

Requirements for admission for foreign students include qualifying scores on either the ACT or SAT. Additionally, the student must be able to read, write, and speak English fluently.

Foreign students receive the same pay and allowance as United States cadets. If a foreign student should be judged unable to profit by the academic courses, become deficient in conduct or military aptitude, or commit an offense for which a United States cadet would be dismissed, the Department of the Air Force will be requested to withdraw the student from the Air Force Academy.

Foreign students who meet the established academic requirements will be awarded a bachelor of science degree. However, they are not commissioned in the United States Air Force. The maximum number of foreign students at the Academy is 40. No more than three people from any country may be enrolled at the same time.

"All things are difficult before they are easy."
--John Norley.

"Many receive advice, only the wise profit from it."
--Virgil

Authorized Strength of the Air Force Academy Cadet Wing

Congressional legislation provides for an authorized strength of 4,546 cadets. The authorized appointments at maximum strength for each nomination category are shown below. Cumulative appointments are the total number available, of which approximately one-third will enter each year. The other appointments are filled annually.

Nomination	Authorized Appointments (Cumulative)
100 United States Senators (5 each)	500
435 United States Representatives (5 each)	2,175
Vice President	5
District of Columbia	5
Puerto Rico	6
Panama Canal	1
American Samoa	1
Guam	2
Virgin Islands	2
Children of Deceased or Disabled Veterans and Children of Persons in a Missing Status	65

Foreign Students

Maximum Allowed by Law	40

	(Annual)
Presidential	100
Regular Components	85
Reserve Components	85
Honor Military and Naval Schools, AFROTC and AFJROTC	20
Children of Medal of Honor Recipients	No Limit
Qualified Alternates	Number needed to fill each class.

Format for Request for Congressional Nomination

(Use this format as a guide. A separate letter must be sent to each Senator and Representative to whom you apply.)

Date_____

The Honorable_____
House of Representatives
Washington DC 20515

OR

The Honorable_____
United States Senate
Washington DC 20510

Dear Mr._____:

OR

Dear Senator_____:

It is my desire to attend the Air Force Academy and to serve in the United States Air Force. I respectfully request that I be considered as one of your nominees for the class that enters the Academy in July 19__ and submit the following data:

Name (print as recorded on birth certificate)

Social security number

Permanent address (street, city, county, state, zip code):

Temporary address (if applicable):

Permanent phone number and area code:

Temporary phone number and area code (if applicable):

Name of father:_____ Name of mother:_____

Date and place of birth (spell out month):

Name and address of high schools:

Date of graduation:_____Approximate grade average:_____

Furnish scores if you have taken tests:

PSAT	ATP (SAT)	ACT
Verbal_____	Verbal Apt_____	English_____
Math_____	Math Apt_____	Math_____

Extracurricular activities (include athletic and nonathletic activities and work experience):

State your reasons for wanting to enter the Air Force Academy:

I (have) (have not) requested a precandidate questionnaire from the Air Force Academy.

I will greatly appreciate your consideration of my request for a nomination to the Air Force Academy.

Sincerely

Signature_____

SAMPLE

Format for Request for Military-Affiliated Nomination

(Use this format for any of these categories: Presidential, Children of Deceased or Disabled Veterans, or Children of Medal of Honor Recipients.)

Date_____

Director of Admissions
HQ USAFA/RRS
USAF Academy
Colorado Springs CO 80840-5651

Dear Sir:

It is my desire to attend the Air Force Academy and to serve in the United States Air Force. I request a nomination under the _____ category for the class that enters the Academy in July 19__ and submit the following data:

Name (print as recorded on birth certificate)

Social security number:

Permanent address (street, city, state, zip code):

Temporary address (if applicable):

Permanent phone number and area code:

Temporary phone number and area code (if applicable):

Date and place of birth (spell out month):

Date of high school graduation:

If military, list your rank, regular or reserve component, branch of service, and organizational address including PSC box no.

If previous candidate, list the year.

Information on parent:

Name, rank, social security number, component and branch of service.

Parent active duty (attach statement dated and signed by current personnel officer specifying all periods of active duty and any breaks therein).

Parent retired or deceased (attach copy of retirement orders or casualty report; include Veterans Administration claim number and VA office where case is filed, if appropriate).

Parent Medal of Honor recipient (include brief statement with date and circumstances of award).

Sincerely,

Signature_____

SAMPLE

Medical Examination Requirements

Your medical qualification for appointment to the service academies is determined through one general standardized examination used by all academies and commissioning sources. However, the Air Force Academy also requires a dilated eye exam to determine flying status. Examinations are conducted at designated examining centers located throughout the United States and at some overseas bases. You must take the qualifying examination on or after June 1st of the year preceding the year of admission. Therefore, prior candidates who are reapplying must retake portions of the medical examination.

The examining facility will not determine your qualification for admission. Examination results will be forwarded for review by the Department of Defense Medical Examination Review Board (DODMERB). Its final determination regarding medical qualification will be furnished to you and the Academy.

Before taking the qualifying medical examination, you should review your past and present medical history with the assistance of your parents and family physician. The medical history must be compiled by the examining facility with particular care and full elaboration of details. Complete documentation of all illnesses, injuries, and operations is absolutely necessary. You may avoid delay in evaluation of the medical qualification by obtaining statements from the attending physician or from hospital records concerning any past or present medical care and presenting them to the examining facility when reporting for the examination.

You are encouraged to undergo a thorough dental examination by your private dentist and have the indicated treatment completed prior to taking the military dental examination. The following factors may disqualify you for admission to the USAF Academy:

--Insufficient natural healthy teeth or lack of serviceable substitute to permit a normal diet to be adequately chewed.

Medical reviews are very thorough.

--Diseases and abnormalities of the jaws or associated structures that are not easily remedied and that may be expected to incapacitate the examinee in performance of duty for prolonged or recurrent periods.

--Poor alignment of the upper and lower teeth which interferes with the chewing of a normal diet or requires early and extended treatment, or a relationship between the jaws which precludes satisfactory future dental replacement.

--Orthodontic appliances for continued treatment, attached or removable. Retainer appliances are permissible, provided all orthodontic treatment has been satisfactorily completed.

If you wear contact lenses, hard lenses must be removed a minimum of 21 and soft lenses three days prior to the medical examination.

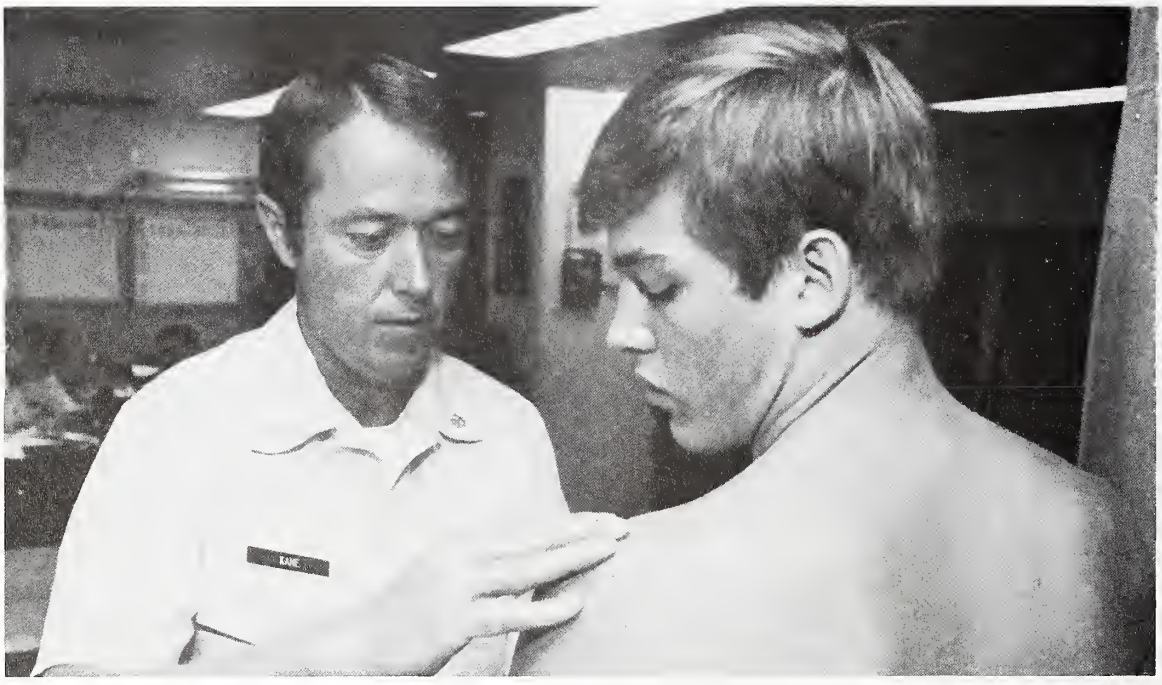
Women will be required to have a pelvic examination which may be completed by a family physician.

Questions concerning a candidate's medical qualification must be referred to the Director of Air Force Standards, DODMERB, Colorado Springs, CO 80840-6518.

Medical History

You and your parents should review the following list of medical conditions to recall your full medical history. The list is not all-inclusive, and it should not be taken as a guide to all conditions which may or may not be disqualifying for admission. Each case is evaluated individually within established standards.

Rheumatic fever
Swollen or painful joints
Bone, joint or other deformity
Painful or "trick" or locked knee
Arthritis or rheumatism
Sickle cell disease
Frequent or severe headaches
Dizziness or fainting spells
Ear, nose or throat trouble
Sinusitis, hay fever, or asthma
Frequent or painful urination
Kidney stone or blood in urine
Bed-wetting
Shortness of breath
Pain or pressure in chest
Palpitation or pounding heart
High or low blood pressure
History of any surgical procedure
Frequent indigestion
Stomach, liver or intestinal trouble
Gall bladder trouble or gall stones
Stuttering or stammering
Frequent trouble sleeping
Sleepwalking
Frequent or terrifying nightmares
Depression or excessive worry
Nervous trouble
Head injuries with or without unconsciousness
Loss of memory or amnesia
Epilepsy or any type of seizures
Tuberculosis
Jaundice
Goiter, tumor, growth, cyst, or cancer



Exams are conducted throughout the country.

An Academy doctor uses a new computerized Baylor Visual Acquity Tester system to verify vision standards.

Visual Requirements

In reviewing the medical standards at the end of this chapter, you will notice that the visual requirements for pilot qualification are very high. In addition, flight qualification requires color vision. Excessive refractive errors present the most significant problems in meeting the pilot or navigator qualifications. Your visual qualifications are initially evaluated on the medical examination. After entering the Academy, a cadet's vision is evaluated periodically by the eye clinic, and visual care and counseling will be provided.

The development of nearsightedness commonly occurs in the late teenage years. Therefore, some cadets who meet the visual qualifications to pursue a flying career upon admission will not meet the same qualifications at graduation. You should keep in mind that this situation can occur in order to minimize the feeling of discouragement if you are not physically qualified for pilot or navigator assignment at the time of graduation. No measures have proven to be effective for permanently impeding the progression of nearsightedness. Radial keratatomy and similar surgical alterations to the cornea are experimental operations for myopia (nearsightedness) and will disqualify an individual for flying training and Air Force commissioning. Personnel on flying status may not wear contact lenses.

"All worthwhile men have good thoughts, good ideas, and good intentions. But, precious few of them ever translate those into action."
--John Hancock Field

Medical Standards

All candidates admitted to the Air Force Academy must meet the medical standards for a commission in the United States Air Force at the time of graduation. You must meet your weight standard as listed on the following chart to receive an appointment. If you fail to maintain that standard as a cadet, you may be disenrolled. Each applicant's report of medical examination is evaluated carefully on an individual basis, and no list of standards can cover all cases. However, those standards which apply to the greatest number of applicants are outlined below.

Pilot

Visual Acuity

Distant: 20/20 or better uncorrected in each eye. Near: 20/20 or better uncorrected in each eye.

Refractive Error

Farsightedness (hyperopia) no greater than +1.75 diopters and nearsightedness (myopia) no less than plano (0.00 diopters) in any one meridian, and the astigmatic error must not exceed 0.75 diopters.

Hearing

Maximum hearing loss in each ear cannot be greater than as follows (ANSI Standards 1969):

Frequency	500	1000	2000	3000	4000	6000
Loss	25	25	25	*	*	*

*No more than a total of 270 decibel loss for the top three frequencies for both ears.

Standing Height

64 inches minimum to 76 inches maximum.

Sitting Height

34 inches minimum to 39 inches maximum, measured while sitting erect, the distance from top of head to chair seat.

Weight

See the height/weight chart on page 87.

Navigator

Visual Acuity

Distant: 20/70 or better uncorrected in each eye, correctable with ordinary glasses to 20/20 in each eye. Near: 20/20 or better uncorrected in each eye.

Refractive Error

Farsightedness (hyperopia) no greater than +3.00 diopters and nearsightedness (myopia) no greater than -1.50 diopters in any one meridian, and the astigmatic error must not exceed 2.00 diopters.

Height, Weight, Hearing

Same as pilot standards.

Commission

Visual Acuity

Distant: correctable to 20/40 in one eye and 20/70 in the other, or 20/30 in one eye and 20/100 in the other, or 20/20 in one eye and 20/400 in the other. Near: correctable to 20/20 (J-1) in one eye and 20/30 (J-4) in the other.

Refractive Error

In spherical equivalent of not more than +8.00 or -8.00 diopters.

Standing Height

60 inches minimum to 80 inches maximum.

Weight

See the height/weight chart on page 87.

Hearing

Same as pilot standards.

"Don't worry about it. Worry causes wrinkles, and the Academy doesn't allow wrinkles."
--Cadet Michael D. Murphy, Class of 1988

Commission Height-Weight Standards

The weight standards below ordinarily will not be waived. However, exception to the standards may be granted if a generally large bone structure and large, well-proportioned muscle masses without evidence of thick fat layers account for the excess weight. Obesity is disqualifying.

HEIGHT	WEIGHT	
Inches	Minimum	Maximum
MEN		
60	100	153
61	102	155
62	103	158
63	105	164
64	105	169
65	106	169
66	107	174
67	111	179
68	115	184
69	119	189
70	123	194
71	127	199
72	131	205
73	135	211
74	139	218
75	143	224
76	147	230
77	151	236
78	153	242
79	157	248
80	161	254
WOMEN		
60	92	130
61	95	132
62	97	134
63	100	136
64	103	139
65	106	144
66	108	148
67	111	152
68	114	156
69	117	161
70	119	165
71	122	169
72	125	174
73	128	179
74	130	185
75	133	190
76	136	196
77	139	201
78	141	206
79	144	211
80	147	216

A new cadet is measured for uniforms.

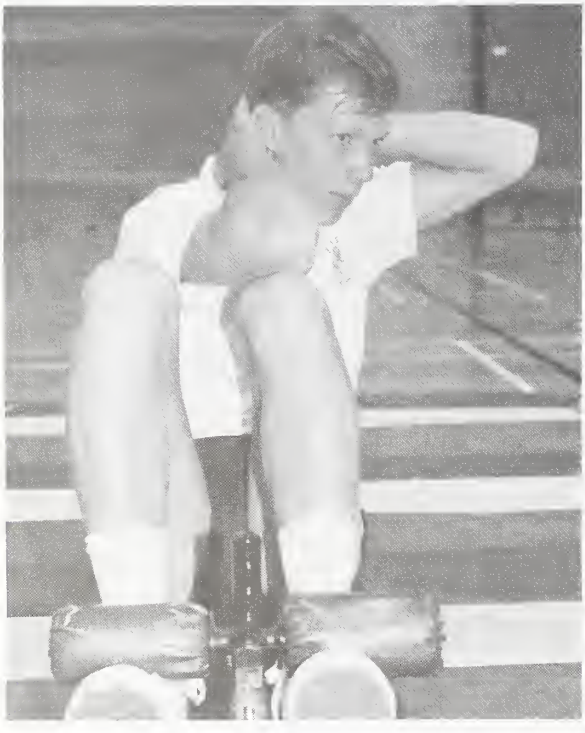
"The will to win is worth nothing unless you have the will to prepare."
--Anonymous

Candidate Fitness Test

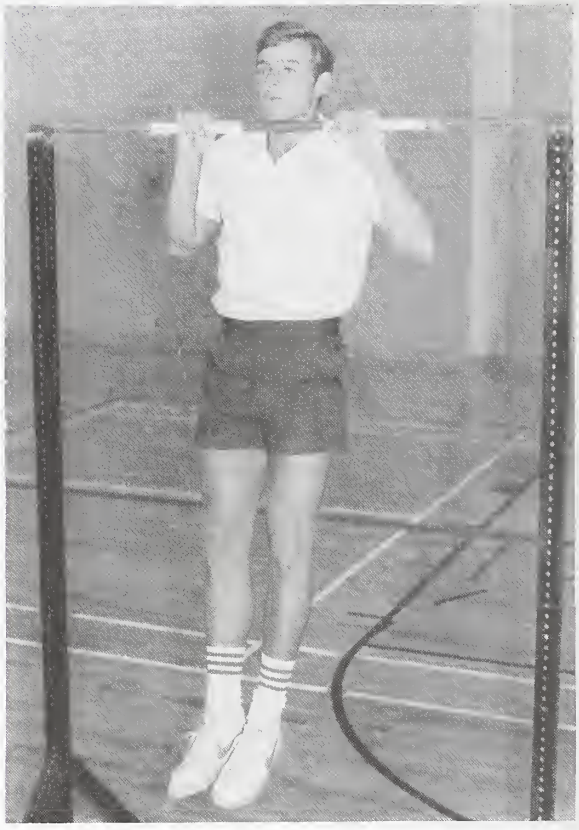
The Candidate Fitness Test (CFT) consists of exercises designed to measure coordination, strength, endurance, speed, and agility. You will be scheduled for a CFT only if an evaluation of your precandidate questionnaire indicates that you meet the minimum qualifications for admission and you have received a nomination. You will be scheduled to take the CFT at an examining center as close as possible to your home. If you practice the following items, you should be prepared for the test. **Failure to attain a satisfactory score disqualifies you for admission.**

Pullups

From a momentary hang position on a horizontal bar, palms away from your face, elevate your body until your chin is above the bar. Return to the straightarm hang position and repeat as many times as possible. No resting is allowed.



"I thought I knew what I was getting into. I'm glad I didn't; it's been far more exciting to learn by experience."
--Cadet Mary E. Seiler, Class of 1988



Situps

From a position lying flat on your back, legs flexed, feet comfortably apart and held, place your hands on the back of your head with your fingers interlocked. Sit up and touch your elbow to your opposite knee and return to the starting position. Alternate the knee you touch with the opposite elbow on successive situps. No resting is allowed, and there is a two-minute time limit.

Pushups

Start from a position lying face down, with your hands on the floor directly under the outside points of your shoulders. Raise your body by straightening your arms, keeping your body straight from your shoulders to your heels. Lower your body until your chest touches the floor. No resting is allowed, and there is a two-minute time limit.

300-Yard Shuttle Run

Run six round trips between two turning lines, 25 yards apart, in the shortest time possible. You must stay within a five-foot wide lane.

Below are the CFT scores for men and women candidates:

EXERCISE	MEN		WOMEN	
	Minimum	Average	Minimum	Average
Pullups	3	10	1	2
Situps (2 minutes)	39	73	36	70
Pushups (2 minutes)	11	40	4	25
300-Yard Shuttle Run	64.7 sec	60.2	78.6 sec	68.3 sec

Selection Procedures

Starting in November the candidate selection panel meets weekly to review completed files. The panel, comprised of senior officers assigned to the Academy, considers your qualifications based on information contained in your records. The evaluation is based on academic and leadership potential, and your motivation and aptitude for the Academy. The panel lists candidates in order of merit according to their overall selection composites.

The Academy Board, composed of the Superintendent and his senior staff officers, appoints candidates to fill the available cadet vacancies in each nominating category. The Secretary of the Air Force gives final approval to the appointment recommendations. All candidates will be notified of their appointment status by mid-May.

Names of qualified candidates who are not selected to fill the specific vacancies for which they were nominated are placed on a qualified alternate list. The Academy offers appointments to a sufficient number of people from this list to bring the entering class to the desired size. Selections are made on a competitive basis. No special application by the individual is necessary since qualified candidates in all nominating categories will be considered. Congressional nominees selected as qualified alternate appointees are not counted against the congressional member's chargeable cadet quota.

Early Selections

If you are a qualified candidate and have a principal nomination, or are any other highly qualified candidate, you may be notified of an appointment as soon as your records are complete. A complete record includes all correspondence concerning a candidate and the following documents: results of required examinations (SAT or ACT, Candidate Fitness Test, and medical exam); candidate activities record; high school transcript; preparatory school and/or college transcript, when appropriate; drug certificate; and personal data record.

Regular Selections

If you have not received an early appointment, you will be considered in April if your records are complete and you are fully qualified. If your medical status has not been determined by April 1st you will be considered for a conditional appointment. If selected, the appointment would depend upon a determination of medical qualifications. If you are attending college or a post-high school preparatory school, you may be offered a conditional appointment pending receipt of a satisfactory final college or preparatory school transcript.

Late Selections

If your records are not complete by April 1st, you will be considered for an appointment at a later date only if a vacancy should occur and you are eligible in that category. Since some initial appointees may decline their appointment offers, other qualified candidates will be selected to fill those vacancies. In such cases, the replacement candidates may not be notified of appointments until shortly before the class enters.

You have a right to feel happy about an appointment.

New cadets stop at one of numerous inprocessing stations.

Appointee Requirements

Documentary Requirements

Social Security Number

You must have a Social Security number to open an admission file. If you do not have one, ask for a SSA-5 Form from your local Social Security Administration Office. You must furnish evidence of your date of birth, identity, and U.S. citizenship.

Transcripts and Activities Record

You must submit your entire secondary school scholastic record as well as transcripts for any preparatory school or college attended. High school students must submit their current rank in class if known. You will be required to submit an activities record outlining your high school extracurricular performance or other activities which indicate leadership potential.

Birth Certificate or Proof of Citizenship

You must submit proof of citizenship if you were foreign born or naturalized. U.S. citizenship is required unless you are applying as a foreign student. If you are adopted, claiming eligibility in a nominating category through an adoptive parent, you must submit a copy of the court order of adoption. Adoption proceedings must have been initiated before your fifteenth birthday. You must use your name as it appears on the birth certificate on all official records unless legal evidence authorizing a name change has been provided to the Admissions Office.

Admission Deposit

Each appointee will be requested to deposit $1,000 at the time of entry to the Academy. The deposit will be collected during initial processing. The amount will be credited to your cadet pay account and will be used to help defray the cost of uniforms and other personal expenses that will be incurred immediately after entry. The deposit should be made in the form of a cashier's check or money order, with your name on it, made payable to: Accounting and Finance Officer.

In a case of extreme hardship, this deposit may be reduced. If you are unable to make a full deposit, you will receive reduced monetary allowances until your account reaches the level as prescribed for the class.

The $1,000 entrance deposit is supplemented by an advance authorized by the Secretary of the Air Force not to exceed $1200 to each cadet upon admission to the Academy. The advance must be repaid during the time you are in training. The repayment is accomplished by recouping from your monthly pay until the advance is repaid.

Cadets who are involuntarily separated from the Academy prior to repayment of the advance will have all excess pay and allowances applied against the indebtedness. If the indebtedness is not satisfied by such application of funds, cadets may turn in enough clothing and equipment of a distinctive military nature to liquidate the remaining balance. Cadets who are voluntarily separated for their own convenience may turn in certain unused and unaltered uniform and equipment items for monetary credit. Cadets who are voluntarily separated must satisfy any indebtedness that remains after such monetary credit is extended.

Travel Expenses

Appointees will receive instructions concerning reimbursement for travel to the Academy. Travel allowances will be credited to your personal checking account. Appointees who refuse to take the Oath of Allegiance upon arrival at the Academy, or are disqualified for admission because of some fault of their own, will **not** be entitled to any travel allowances.

Service Obligations

The service obligations apply to all cadets except foreign students.

Taking the Oath.

Oath of Allegiance

When you process into the Academy, you will be asked to take the Oath of Allegiance:

> "I, (name), having been appointed an Air Force cadet in the United States Air Force, do solemnly swear (or affirm) that I will support and defend the Constitution of the United States against all enemies, foreign and domestic; that I will bear true faith and allegiance to the same; that I take this obligation freely, without any mental reservation or purpose of evasion; and that I will well and faithfully discharge the duties of the office on which I am about to enter. So Help Me God."

Service Agreement

Before you take the oath, you will be required to sign an agreement, with the consent of your parents or guardian if you are a minor, that you will fulfill the following service obligations:

--Complete the course of instruction at the Academy (unless you are disenrolled by proper authority).

--Accept an appointment and serve as a commissioned officer in the Regular Air Force for five years after graduation.

--If authorized to resign from the Regular component before the sixth anniversary of your graduation, serve as an officer in the Reserve component until the sixth anniversary.

Service Understanding

You will be required to sign a Statement of Understanding which involves the following conditions set forth in Title 10 of the U.S. Code:

--A cadet who enters the Academy from the Regular or Reserve component of any service, if discharged from the Academy prior to graduation, will normally revert to former rank and branch of service for the completion of or the remaining period of obligated service.

--A cadet who enters the Academy from civilian life will assume a six-year legal obligation to serve in the Air Force, either active or reserve. If discharged from the Academy prior to graduation, the person will be subject to current Air Force policy.

Discharge Policy

The policy requiring discharged cadets to serve in the Air Force may vary, depending on manpower needs of the Department of Defense. The current Air Force policy is as follows:

--Fourth- and thirdclass cadets who are separated by the Academy or whose resignations are accepted will ordinarily be completely relieved from all military duty, active or reserve.

--Second- and firstclass cadets who are separated by the Academy or whose resignations are accepted will normally incur an active duty service commitment of not more than four years. Exceptions will be made for humanitarian reasons and those few cases in which it is not in the best interest of the Air Force to call a cadet to active duty because of physical disqualification, misconduct or demonstrated unsuitability for military service in an enlisted status. Those incurring the commitment will normally be transferred to the Air Force Reserve and ordered to active duty in enlisted airman status. Secondclass cadets who are disenrolled or resign on or after the first day of academics in the fall semester of the secondclass year will incur a two-year active duty service commitment. Firstclass cadets who complete the entire academic program and resign or refuse to accept a commission may be ordered to active duty for four years.

--Cadets who fail to complete any period of active duty may incur a liability to reimburse the U.S. Government for an appropriate proportion of the cost of their Academy education.

Resignation Policy

A cadet who submits a request to resign must state a specific reason for the action. The cadet will be counseled to determine if his or her problem can be resolved prior to action being taken to process the resignation.

Liaison Officer Commanders

Throughout the admissions process the Academy provides you with any assistance you might need through Admissions Liaison Officers (LOs). The majority of these LOs are Air Force officers, either Reserve, Air National Guard, retired or active duty. LOs keep informed about the Academy and the admissions process through frequent contact with the Academy. These officers are qualified to assist you on all aspects of admission and many phases of the Academy's education and training. In addition, LOs provide counseling for the Air Force Reserve Officer Training Corps (AFROTC) commissioning program. They can also tell you firsthand what being an officer will be like after you graduate. If you become a qualified candidate, you will be required to meet with your LO as part of the admissions process. You may be able to obtain your LO's name and address from your guidance counselor. If not, you may request this information from the Liaison Officer Commander (LOC) on the following list who lives closest to you.

Alabama

Lt Col Davis H. Crenshaw
466 O'Neal Drive
Birmingham AL 35226
Ph: 205-822-8682

Alaska

Capt David M. Srulowitz
9-340E Chinook Circle
Elmendorf AFB AK 99506
Ph: 907-753-1303

Arizona

Maj Roy P. Miller
1529 W. Virginia Ave
Phoenix AZ 85007
Ph: 602-254-1221

Arkansas

Maj Gary W. Jackson
4 Timber Trails
Rogers AR 72755
Ph: 501-636-6827

California

Northern California Area

Lt Col John G. Briner
2905 Christian Valley Road
Auburn CA 95603
Ph: 916-878-1150

Los Angeles Area

Lt Col Kenny Tanaka
602 Houseman Street
La Canada CA 91011
Ph: 818-790-1971

San Francisco/Oakland Area

Lt Col John H. Ellison
1359 Sydney Dr
Sunnyvale CA 94087
Ph: 408-732-2489

San Diego Area

Col John Peters
6062 Wenrich Drive
San Diego CA 92120
Ph: 619-286-2244

Orange County Area

Lt Col John W. Garten
1220 El Dorado
Placentia CA 92670
Ph: 714-993-0914

San Fernando Valley Area

Col Walter G. Jennings
7041 Darnoch Way
Canoga Park CA 91307
Ph: 818-347-5292

Central California Area

Maj Francis A. Palm
620 Orchard Dr
Arvin CA 93203
Ph: 805-854-2984

San Bernardino/
Riverside Area

Col Caesar A. Ricci
11875 Kitching St
Sunnymead CA 92388
Ph: 714-656-1179

Ventura County/
Santa Barbara Area

Col Ronald L. Stanton
1151 Calle Elaina
Thousand Oaks CA 91360
Ph: 805-498-3435

Colorado

Southern Colorado Area

Maj Robert W. Langley
390 Buckeye Drive
Colorado Springs CO 80919
Ph: 303-599-0702

Northern Colorado Area

Maj Robert J. Powers
1424 45th Ave
Greeley CO 80631
Ph: 303-351-6517

Connecticut

Lt Col Peter M. Green
49 Harvard Terrace
Gales Ferry CT 06335
Ph: 203-464-0191

Delaware

Maj John T. Reardon
427 Bradford St
Dover DE 19901
Ph: 302-674-5443

Florida

Northern Florida Area

Maj Robert V. Bilik
3956 University Club Blvd
Jacksonville FL 32211
Ph: 904-744-1231

Southern Florida Area

Col Robert D. Kerley
5821 SW 37th Ave
Ft Lauderdale FL 33312
Ph: 305-961-3492

Central Florida Area

Lt Col Marvin R. Wolgast
247 Birch Lane
Lakeland FL 33803
Ph: 813-646-0501

Georgia

Maj Thomas Lokey
2 Bigby Court
Columbus GA 31909
Ph: 404-327-9867

Hawaii

Col Walter K. W. Young
2618 Ferdinano Ave
Honolulu HI 96822
Ph: 808-988-2612

Idaho

Capt John L. Farbo
1789 Appaloosa Road
Moscow ID 83843
Ph: 208-885-7087

Illinois

Southern Illinois Area

Lt Col Gary D. Hacker
2710 Overhill Road
Pekin IL 61554
Ph: 309-347-6754

Northern Illinois Area

Col David J. Wege
6904 New Hampshire Trail
Crystal Lake IL 60014
Ph: 815-459-4421

Indiana

Col Wayne K. Morgan
6076 Rucker Rd
Indianapolis IN 46220
Ph: 317-253-0478

Iowa

Maj Joe L. Martin
406 East Erie Street
Missouri Valley IA 51555
Ph: 712-545-3795

Kansas

Lt Col Gale A. DeVore
3205 Westwood Drive
Topeka KS 66614
Ph: 913-273-0526

Kentucky

Maj Donald J. Keefe
9002 Cardiff Rd
Louisville KY 40222
Ph: 502-426-6784

Louisiana

Maj Ralph Berry
6622 Lindsey Neal
Greenwell Springs LA 70739
Ph: 504-261-8923

Maine

Col Harlan Glover
20 Brookside Dr
West Falmouth ME 04105
Ph: 207-797-4695

Maryland

Maj Jack Raun
RR 1 Box 231A
Sharpsburg MD 21782
Ph: 301-432-8386

Massachusetts

Western Massachusetts Area

Maj Richard J. Kosinski
40 Cherry St
Feeding Hills MA 01030
Ph: 413-789-1228

Eastern Massachusetts Area

Lt Col Robert W. Canfield, Jr.
28 Old Coach Road
Sudbury MA 01776
Ph: 617-443-4593

Michigan

Eastern Michigan Area

Lt Col Joseph F. Page III
3157 Oakhill Drive
Troy MI 48084
Ph: 313-642-4259

Western Michigan Area

Maj Robert C. Salisbury
4180 Squire Heath Lane
Portage MI 49002
Ph: 616-

Minnesota

Lt Col Dennis J. Sultany
11421 Zion Road
Bloomington MN 55437
Ph: 612-432-8160

Mississippi

Maj John P. Sparkman
706 Dickert St
Macon MS 39567
Ph: 601-726-5038

Missouri

Lt Col David M. Harding
922 Walnut St, Suite 515
Kansas City MO 64106
Ph: 816-361-5669

Montana

Maj Arvid A. Aronson
32 Big Sky Blvd
Kalispell MT 59901
Ph: 406-755-7123

Nebraska

Maj Daniel R. Murray
724 Rosedale Drive
Scottsbluff NE 69361
Ph: 308-632-6554

"I think it's very important to maintain closeness; not only during the first year, but throughout a cadet's entire four years at the Academy."
--Major Charles Black, Deputy LO of the Year, New Jersey

Nevada

Col Andrew P. Grose
4801 Bryce Dr
Carson City NV 89701
Ph: 702-882-0741

New Hampshire

Maj David West
RR 3, 92 Robinson Road
Bow NH 03301
Ph: 603-224-9637

New Jersey

Northern New Jersey Area

Maj Edward Barry
258 Kingsland Ter
South Orange NJ 07079
Ph: 201-762-7189

Southern New Jersey Area

Maj Anthony T. Greski, Jr.
Route 1, Box 196
Medford NJ 08055
Ph: 609-267-9304

New Mexico/El Paso TX

Maj Ann M. Parey
8515 Osuna
Albuquerque NM 87109
Ph: 505-293-6000

New York

Western New York Area

Lt Col John C. Blackmar
93 Stallion Cir
Rochester NY 14626
Ph: 716-227-1192

Eastern New York Area

Maj David R. Fisher
517 North Main St
Gloversville NY 12078
Ph: 518-725-5965

Long Island Area

Col Peter J. Hermann
25 Wellington St
Hempstead NY 11550
Ph: 516-489-5557

New York City Area

Lt Col Kenneth C. Klotzkin
90 Union Street
New Rochelle NY 10805
Ph: 914-235-8775

Southern New York Area

Lt Col Edwin L. Whitman
89 Somerset Drive
Suffern NY 10901
Ph: 914-357-7992

North Carolina

Western North Carolina Area

Maj Wayne G. Brown
5145 Lake Jeanette Road
Greensboro NC 27405
Ph: 919-288-6682

Eastern North Carolina Area

Maj William H. Burnette
7617 Audubon Dr
Raleigh NC 27609
Ph: 919-847-1644

North Dakota

Lt Col Earl S. Mason
Box 308
Maddoc ND 58348
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Ohio

Northeast Ohio Area

Lt Col Chaker J. Fadel
2145 Thurmont Rd
Akron OH 44313
Ph: 216-867-1873

Southwest Ohio Area

Maj James P. Landis
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Germantown OH 45327
Ph: 513-855-4328

Northwest Ohio Area

Lt Col Wayne A. Starr
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Toledo OH 43615
Ph: 419-882-6869

Southeast Ohio Area

Capt Warren J. Bell
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Ph: 614-882-4969

Oklahoma

Maj John E. Vest, III
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Sand Springs OK 74063
Ph: 918-245-6796

Oregon

Maj John E. Roberts
1755 Niedermeyer Drive
Medford OR 97502
Ph: 503-773-4421

Pennsylvania

Eastern Pennsylvania Area

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Blue Bell PA 19422
Ph: 215-646-7244

Western Pennsylvania Area

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Pittsburgh PA 15219
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Rhode Island

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Wakefield RI 02879
Ph: 401-783-7736

South Carolina

Col William M. Grooms
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Columbia SC 29204
Ph: 803-788-5659

South Dakota

Col John E. Kittelson
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Sioux Falls SD 57102
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Tennessee

Eastern Tennessee Area

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Memphis TN 38115
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Western Tennessee Area

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Texas

Austin-Central Texas Area

Maj David J. Donan
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Round Rock TX 78664
Ph: 512-255-0337

Northeast Texas/Dallas Area

Maj Donald E. Crawford
7145 Crooked Oak Drive
Dallas TX 75248
Ph: 214-931-5843

Northern Texas/
Fort Worth Area

Maj Dennis B. Jones
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Ft Worth TX 76179
Ph: 817-236-7689

South-Southwest Texas Area

Maj Erwin W. Keller
13614 Wood Lane
San Antonio TX 78216
Ph: 512-494-0614

Southeast Texas/
Houston Area

Col Roy I. Smith, Jr.
P.O. Box 27435
Houston TX 77227
Ph: 713-626-4074

West-Northwest Texas Area

Maj Leonard D. Williams
4311 54th St
Lubbock TX 79413
Ph: 806-792-4911

El Paso Area

See New Mexico

Utah

Lt Col Larry Burke
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Kaysville UT 84037
Ph: 801-544-9996

Vermont

Lt Col Thomas Beshara
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Bennington VT 05201
Ph: 802-447-7181

Virginia

Eastern Virginia Area

Maj Jerry Van Lear
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Chesterfield VA 23832
Ph: 804-271-9241

Western Virginia Area

Lt Col Don McDaniel
5769 Oakland Blvd
Roanoke VA 24019
Ph: 703-362-2940

Washington DC

Lt Col David Finkleman
13019 Tamarack Rd
Silver Spring MD 20904
Ph: 301-384-1185

Washington

Western Washington Area

Maj Richard Baranzini
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Seattle WA 98155
Ph: 206-485-8413

Eastern Washington Area

Maj Jack Whorley
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Spokane WA 99208
Ph: 509-466-6723

West Virginia

Maj Garry L. Bowers
RR7 Box 537
Morgantown WV 26505
Ph: 304-594-1651

Wisconsin

Lt Col Brian L. Eide
N84 W18375 Seneca Court
Menomonee Falls WI 53051
Ph: 414-255-1569

Wyoming

Col Carol A. Holland
1010 Randall Blvd
Cheyenne WY 82001
Ph: 307-635-9348

Europe

Capt Bob Sharps
Box 635
APO NY 09223

United Kingdom

Maj Thomas C. Zabel
Box 52
APO New York 09755
Ph: 003-943-3737

Pacific

Capt Thomas Parker
9ACCS
Hickam AFB HI 96853
Ph: 808-487-6988

Panama

Maj George Weedin
PSC Box 1186
APO Miami CZ 34002
Ph: 085-3804

"If you're not enthused with the program, how can you expect to sell it to someone else?"
--Lt Col Dennis J. Sultany, 1984 Liaison Officer Commander of Year, Minnesota

An LO discusses the Academy with high school students and their counselor.

The Academy Preparatory School

The Air Force Academy Preparatory School is located on the Academy grounds, approximately five miles south of the main cadet area. The Prep School gives eligible Air Force enlisted men and women, and selected applicants who were not offered Academy appointments, the opportunity to improve their whole-person score. Students must be at least 17 and not over 21 years old as of July 1st of the year they enter the Prep School. Consideration for the Prep School is based on your high school academic record, extracurricular activities, military performance, and the results of Academy examinations. Candidates selected for a Prep School appointment will be notified from April through June.

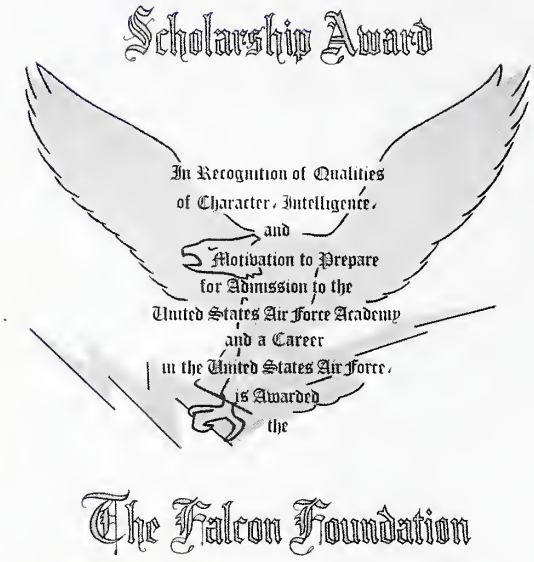
The Prep School's curriculum is divided into five areas: English, math, chemistry, military training, and athletics. This preparation enhances your chances of receiving an appointment to the Academy the following year. However, completion of the Prep School program does not guarantee you will become a cadet.

Enlisted members of the Regular Air Force and Reserve components who wish to apply to the Prep School should consult Air Force Regulation 53-14. You must submit an Air Force Form 1786 through your unit commander and CBPO. Members of the Army, Navy and Marine corps are not eligible to apply under the Air Force Regular and Reserve categories. They must receive a nomination to the Air Force Academy from a member of Congress or other nomination category to be eligible for consideration for the Academy Prep School.

Civilian candidates for the Prep School are automatically selected from among those individuals who applied to the Air Force Academy but did not receive appointments. **They cannot apply directly to the Prep School.** Candidates selected are those whose records indicate outstanding potential for the Academy, but who need additional academic preparation to improve their chances for admission.

The new Prep School commander discusses plans with his student leaders.

Preparatory Scholarships



Two nonprofit agencies, the Falcon Foundation, and the General Henry H. Arnold Educational Fund, provide educational assistance programs to enable deserving candidates to better qualify for admission to the Academy.

The Falcon Foundation awards scholarships to highly motivated and qualified candidates at specific civilian preparatory schools and junior colleges in various parts of the nation. Send your requests for applications and additional information to: The Falcon Foundation, 5450 Tech Center Drive, Suite 405, Colorado Springs, CO 80919.

The General Henry H. Arnold Educational Fund provides educational assistance to children of Air Force personnel. Applicants may make their own choice of an accredited preparatory school or college. Request your application blank from: Director, Air Force Aid Society, National Headquarters, Washington, DC 20333.

ASSOCIATION OF GRADUATES

The Association of Graduates (AOG), the Academy's alumni organization, maintains records on all Academy graduates, making it possible to contact graduates anywhere in the world. All graduates may join the AOG, and any person interested in the Academy may join as an associate member. All AOG members receive the quarterly magazine, *Checkpoints*, and the annual *Register of Graduates*.

The AOG fosters interest and devotion to the Academy, with particular emphasis on the school's history and heritage. It promotes fellowship among Academy graduates and other Air Force officers who are associated with the Academy, and supports many Academy activities. The AOG sponsors a homecoming reunion weekend for graduates and the 100th Night Dining Out for graduating cadets annually.

It also provides assistance for the Academy Assembly, Military History Symposium, and Summer Scientific Seminar.

Anyone interested in contacting the AOG may call (303) 472-2067, or write the Executive Director of the Association of Graduates at: USAF Academy, Colorado Springs, CO 80840-5000.

The AOG sponsors the Vietnam War Memorial.

Questions and Answers About. . .

. . .The Air Force Academy

Thinking About. . .

What does it mean when you say that the Air Force Academy is first and last a military institution?

The Academy trains future career Air Force officers and the entire Academy lifestyle emphasizes that goal. Education in the academic, military and athletic areas prepares cadets for their future military roles. While you attend the Academy you are on active duty in the military, and must meet military requirements like wearing your uniform to classes and marching daily to the noon meal. You will also stand weekly inspections and march in parades. The Cadet Wing chain-of-command is organized like that of an operational Air Force wing. It is divided into four groups of 10 squadrons each. The cadets are in charge of these organizations and run the Wing on a day-to-day basis. You will receive off-base and weekend privileges based on the class you are in and your academic and military standings. You will also receive summer and Christmas leave.

Where is the Academy located?

The Academy is in Colorado, near the northern boundary of Colorado Springs, and 50 miles south of Denver, along the foothills of the Rocky Mountains.

What does it cost to attend the Academy?

Each appointee will be requested to deposit $1,000 at the time of entry to the Academy. The deposit will be collected during initial processing. The amount will be credited to your cadet pay account and will be used to help defray the cost of uniforms and other personal expenses that will be incurred immediately after entry. The deposit should be made in the form of a cashier's check or money order, with your name on it, made payable to: Accounting and Finance Officer.

Do you have to pay your own transportation to the Academy?

You will be reimbursed for your travel expenses once you have taken the oath and been sworn in. Anyone who refuses to take the oath will not be reimbursed for travel.

Is the Academy a college?

Yes, the Academy is an accredited four-year institution of higher learning, and you will receive a bachelor of science degree upon graduation. You may select from one of 23 majors offered, or you may elect to take the nonmajor, basic academic program.

How large is the student body?

Public Law limits Academy enrollment to 4,546. Approximately 1,000 cadets graduate and receive officer commissions each year. The vacancies are then filled by appointments to the new class.

What percentage of cadets belong to minority groups?

About 15% are classed as minority members, including Black, Oriental, Hispanic, and American Indian.

What percentage of cadets are women?

About 12%.

How does the social life of a cadet compare with that of a student at a civilian university?

The many cadet clubs offer a variety of extracurricular activities which enable you to develop your professional interests, creative talents, hobbies and leadership potential. The clubs include recreational and competitive activities as well as community involvement and professional groups. Dating opportunities are limited during your first two years at the Academy. Only 12% of the Cadet Wing are women, and regulations strictly prohibit freshmen from dating upperclass cadets. Many cadets date students from the local area; however, transportation is frequently difficult for underclass cadets to arrange. The frequency of off-base privileges is determined by the class you are in and your academic and military standing within the Cadet Wing. Dances, major concerts, other live entertainment, and movies take place in Arnold Hall, the cadet social center, and cadets may invite friends from the local community to attend.

If I'm a top math and science student, and want to be a military officer, but not an engineer, is the Academy the right choice for me?

The desire to be an Air Force officer is the best motivation for selecting the Academy. Although the Academy is well known for its science and engineering programs, you may select a major in the humanities or social sciences that will prepare you for Air Force career fields other than engineering.

Would it be a good idea to visit the Academy?

Yes, a personal visit to the Academy will give you a better idea of whether the Academy would be the right choice for you. A short briefing and a tour conducted by a cadet may be arranged by calling the Recruiting and Admissions Liaison Office (303-472-2640).

How does the Academy's academic program compare to a top-rated civilian university?

The quality of the Academy's academic program compares favorably with leading institutions such as Stanford, Berkeley, UCLA, MIT, and Harvard. In addition to the North Central Association of Colleges and Schools' accreditation for the standard bachelor of science degree, the engineering majors offered by the Academy are accredited by the Engineering Accreditation Commission of the Accreditation Board for Engineering and Technology and the major in chemistry fulfills the requirements of the Committee on Professional Training of the American Chemical Society. The faculty is primarily military, supplemented by distinguished visiting professors from civilian universities throughout the country, plus many civilian guest lecturers. Approximately six distinguished visiting professors teach at the Academy each year, and return to their civilian universities after their one-year visit. Each year various faculty departments invite nationally renowned scholars to speak to cadets and faculty members on subjects which complement courses taught at the Academy. All Academy instructors must have masters degrees, and about one-third have earned doctoral degrees. There are no graduate assistant instructors at the Academy. Many Academy graduates have won postgraduate scholarships--26 Rhodes Scholarships since the first class graduated in 1959, as well as 23 National Collegiate Athletic Association scholarships, 70 Guggenheim, and 57 National Science Foundation fellowships. The Academy does not offer advanced degrees.

Do you have to live on campus?

Yes, cadets are required to live on campus in the cadet dormitories during their entire four years at the Academy.

Are the dorms coed?

Yes, both dorms are coed, with separate bathroom and shower facilities. Men's and women's rooms are intermixed; however, you will always room with a member of the same sex, and regulations require upperclass inspectors to knock before entering any room.

How are roommates chosen?

Your roommate will be a member of the same class and squadron. In most instances you will share your room with one person; occasionally you will have two roommates. Except during the first summer, you may request a specific roommate, and changes can be made if difficulties arise.

Why do women choose the Academy?

The Air Force offers them many challenging career fields, including the opportunity to fly. As more and more women become career oriented, they recognize the opportunities available to them as Air Force officers.

How well do women do at the Academy?

Women perform comparably to the men at the Academy in academics, leadership, and athletics. There are a representative number of women on the Dean's List (academic excellence recognition), the Commandant's List (military achievement recognition), and as intercollegiate team members and captains, and intramural leaders.

How well do minorities do at the Academy?

Minorities are well represented on the Dean's and Commandant's Lists, as well as in leadership positions in intramural and intercollegiate athletics.

Preparing For. . .

What high school courses should I take to prepare for the Academy?

You should take four years of math and English, at least two years of a foreign language, and basic sciences courses such as biology, chemistry, physics and computer science. It is also helpful to have a background in history, and a typing class will help you with the many papers required as a cadet.

Is special admissions consideration given to honors courses, quality of the high school, etc.?

Yes, the difficulty level of the high school courses and the academic standards of the high school are taken into consideration when evaluating a candidate's records. If you are qualified and have the opportunity to take advanced or honors courses, it is a good idea to do so.

When are the SATs and ACTs given?

You will need to ask your high school counselor for a list of test dates. They are given several times, on different dates throughout the country.

Can I combine my best math score from one SAT or ACT test date with my best English score from another test date?

Academy personnel will use the best of each scores when considering your records. However, they will not mix the two tests; SAT results must be combined with SAT and ACT with ACT. By retaking these tests you have the opportunity to improve your scores.

How can I prepare for the Academy physically and emotionally? When should I begin preparing?

You do not have to be an exceptional athlete, but sports participation will definitely help you. Improving your upper-body strength, running and swimming will help you prepare for the physical demands of the Academy. Emotionally, you must be ready to accept the military structure, restrictions and discipline of the Academy. There is pressure associated with the demanding schedule, time constraints and being away from home, possibly for the first time. While you are in junior high school is not too soon to begin preparing for the Academy. In fact, we recommend an early start.

If I have not participated in high school athletics, what can I do to compensate?

After-school employment and participation in church or civic activities are also considered in compiling your leadership composite. In order to meet the physical demands of the Academy you should establish a physical fitness program for yourself. Be sure to include exercises that develop upper-body strength and stamina, such as pushups, pullups, running and swimming.

What are the academic and physical entrance requirements?

There is no set GPA for acceptance to the Academy, however, more than 90% were in the top quarter of their high school class. The SAT minimums are 500 verbal and 550 math; the averages for students accepted into the Academy are approximately 570 and 650. The ACT minimums are 21 English and 24 Math and the averages are 25 and 30. You must be in good physical condition and pass the required medical exam and Candidate Fitness Test.

Applying For. . .

What do I have to do to get accepted to the Academy?

You must request a precandidate questionnaire, complete all the necessary paperwork, receive a nomination, pass your medical exam, and pass a candidate fitness test.

What are the most common disqualifying medical problems?

Poor eyesight and asthma.

Is the candidate fitness test (CFT) difficult to pass? What are the maximums and minimums?

The CFT is not difficult to pass if you have maintained physical fitness. Men must be able to do at least 3 pullups, 39 situps, 11 pushups, and run the 300-yard shuttle in 64.7 seconds or less. Women must do 1 pullup, 36 situps, 4 pushups, and do the run in 78.6 seconds or less.

Will I be notified of the status of my application?

The Academy will notify you of your standing at various stages of your admissions process. You will be required to complete additional paperwork throughout the process, as well as take a medical exam and fitness test. The Academy and your liaison officer will keep you advised of your status as your records are evaluated.

How do I get a nomination?

The congressional nomination is available to all candidates. You should request a nomination from your two U.S. Senators, your U.S. Representative and the Vice President approximately one year before you want to enter the Academy. Proper authorities in the American territories may also nominate candidates. Students from foreign countries specified by the Department of Defense may request nominations through an appropriate official of their own government. The military-affiliated nominations have special requirements, and are requested through the Director of Admissions at the Academy. If you or one of your parents are in the military, you may qualify under this category. Students from AFROTC units, as well as Air Force Junior ROTC units may request Academy nominations through their school detachments. Honor graduates from any school designated as an honor school by the Department of the Army or Navy may receive nominations from their school. You may, and should, apply through all categories under which you are eligible.

Do you have to know your congressional representative, or have political connections to receive a nomination?

No, all members of Congress want to nominate outstanding individuals who will be competitive for an Academy appointment. The only requirement is that you apply to the Senators and Representative for your district. You should also consider the other nomination sources available.

What is the difference between a nomination and an appointment?

You apply for and receive a nomination to the Academy from your U.S. Representative, U.S. Senators or authorized military source. There are approximately 9,000 candidates for each entering class. The Academy offers appointments to those qualified nominees (candidates) who win in their respective nomination category. There are approximately 1,400 cadets in each entering class.

When will I receive notification of my nomination and appointment?

Normally your member of Congress will notify you first of your nomination and appointment. Official notification from the Academy will follow shortly thereafter. Most members of Congress make their nominations during January. Most appointments are offered between December and May. Individuals seeking military-affiliated nominations will be notified of their nomination as soon as the Academy receives the required application and documentation.

Will recommendation letters from military friends and relatives help my chances of being appointed?

Not necessarily. It is far more important that you do well in high school and score highly on all required tests. Your record should speak for itself; however, any letters that are written should come from knowledgeable sources and contain specific information.

What are my chances of being accepted?

Of the 12,000 applicants, more than 3,000 are fully qualified, and of those approximately 1,400 accept appointments each year. Your chances of appointment depend upon your high school grades, your score on required tests and the activities you have participated in during high school.

If I receive an appointment to one of the other service academies, can I still be considered for an appointment to the Air Force Academy?

Yes, an offer of appointment from one of the other service academies will in no way affect your chances of receiving an appointment from the Air Force Academy.

Can I transfer from another college?

Yes, but you will have to begin as a fourthclass cadet, remain at the Academy the full four years, and take a full academic load each semester. The credits you transfer may fill the requirements for some core courses. This will allow you to take additional electives or advanced courses.

Why should I pursue an Air Force officer's commission through the Academy rather than through AFROTC? What are some of the differences between the programs?

One reason students select the Academy route to an officer's commission over AFROTC is the guarantee of pilot training after graduation if you are medically qualified. Receiving pilot training slots for AFROTC graduates is a very competitive process. As an AFROTC student you attend a civilian college or university and take additional AFROTC courses as a part-time officer training program. The academic courses at the Academy are part of a full-time officer training program.

Can I apply to the Academy from AFROTC?

Absolutely. As a matter fact, there is a nomination category for high school and college AFROTC students. Twenty candidates per year will be offered appointments from this nominating source, and the competition is keen. However, if you are in the senior AFROTC program, you will be required to begin as a fourthclass cadet and complete the entire four-year curriculum at the Academy.

If I don't receive an appointment to the Academy, how can I be admitted to the Academy Prep School?

Civilians cannot apply directly to the Prep School. If you have a nomination to the Academy and do not receive an appointment, Academy officials will consider candidates whose records indicate outstanding potential for success at the Academy. Eligible Air Force enlisted personnel may apply to the Prep School according to the instructions in AFR 53-14. Candidates selected for a Prep School appointment will be notified from April through June.

Life At. . .

What pay do you receive as a cadet?

During your fourthclass year you will receive $60 a month after all expenses have been deducted. You will receive $480 monthly during your third-, second- and firstclass years, but taxes and social security are deducted from your pay. Deductions are also made for personal services such as barber, laundry and cleaning, linen, and for miscellaneous charges for uniforms, textbooks, tailoring, publications, and memberships. You may also elect to have life insurance and contributions deducted from your pay.

What is the food like?

It isn't the home cooking you're used to, but compared to most other mass-produced meals, it's excellent. The meals are served family style and provide ample and nourishing food to sustain you in the rigorous cadet programs. A diet table and box lunches for official trips are provided, as well as food for organizational picnics. Box lunches are also provided for cadets confined to bed due to illness; however, special dietary meals are not provided for religious or individual convictions.

What are classes like?

Most classrooms are small, designed for classes of 15 to 20 cadets. There are larger, 46- and 76-person rooms available when appropriate for instruction. There are also lecture halls available for assemblies, many laboratories, a computer center, a planetarium and an observatory. The athletic facilities, used for physical education and intramural classes, and intercollegiate competition are among the best in the nation.

How many class periods are there each day, and how long are they?

There are seven, 50-minute class periods daily during the academic year. In addition, if you are not on an intercollegiate team you will be required to participate in intramural athletics two afternoons a week. Your typical day will begin at 6:00 a.m. and as a freshman, unless you have special permission, you must have lights out by 11:00 p.m.. Parades, inspections and other military formations often take place on Saturdays.

What are the core courses?

During your four years at the Academy, you'll be required to take aeronautics, astronautics, aviation, behavioral science, biology, chemistry, computer science, economics, electrical engineering, engineering, English, foreign language, history, law, management, math, mechanics, philosophy, physical education, physics, political science, professional military studies and academic electives. In addition, each summer you will be required to take military training classes. Your total curriculum hours will depend on the major selected (if any) and flight core scheduling.

What academic majors are offered?

The 23 academic majors are:

aeronautical engineering
astronautical engineering
basic sciences
behavioral sciences
biology
chemistry
civil engineering
computer science
economics
electrical engineering
engineering mechanics
engineering sciences
general engineering
geography
history
humanities
international affairs
management
mathematical sciences
operations research
physics
social sciences
space sciences

Can women cadets take all subjects which are open to men cadets?

All academic programs are open to women, and the requirements are the same for men and women. Most physical education classes are coeducational, with separate training in certain combative courses.

Can I receive a double major at the Academy?

Yes, you may even triple major, as long as you maintain the required GPA.

How much time is allowed for study?

Study periods are scheduled during each week day. Three hours are set aside each evening for "academic call to quarters."

Do you remain in the same squadron throughout your four years at the Academy?

No, during the summer you will live in an area of the dormitory determined by your summer training program. When academics begin for your thirdclass year, you will be assigned to a new squadron.

What is Basic Cadet Training (BCT) like?

BCT is a rigorous training program. During this five-week summer period you will receive military training ranging from customs and courtesies to rifle drill and marching. Your physical conditioning will include exercises, running and competitive sports. You'll live under field conditions during the Jack's Valley portion of BCT. You will also receive an introductory flight during BCT. A typical day starts at 6:00 a.m. and your day is full of activity until lights out at 10:00 p.m.

Does a cadet have to wear the uniform when away from the Academy?

It depends. Fourthclass cadets are not permitted to wear civilian clothes until authorized by the Commandant of Cadets. Other cadets may wear civilian clothes when on leave, weekend passes, and off base while off duty.

How short do women have to cut their hair?

During in-processing women's hair is cut a 3″ length all around. Following BCT, a woman cadet's hair when fully brushed, may not extend below the bottom of her collar.

What happens if a female cadet becomes pregnant while attending the Academy?

She has the option of resigning; taking a one-year turnback and returning to the Academy after giving the child up for adoption; or terminating the pregnancy at her own cost. A cadet who elects to remain at the Academy while pregnant will be disenrolled. Neither male nor female cadets may remain at the Academy and support a child.

How often will I be able to take leave or visit home?

Your first opportunity to take leave is normally during Christmas break. Some cadets also go home during spring break, depending upon the distance. Most cadets receive three weeks summer leave, provided they are not scheduled for summer classes.

How much free time will I have?

The amount of free time varies according to your class, and the time you'll need for studying to achieve the required grades. During BCT, you'll be kept very busy, and the free time you do have will probably be spent writing letters home and shining boots. You are not allowed to leave the campus during this period. During the academic year, free time is limited during the week, but weekend privileges are increased by class. During your first year you are limited to visitors on Saturdays and Sundays and occasional authorizations to leave the Academy and go into the local area. By your firstclass year you will be able to leave the Academy almost every weekend if your performance is up to standards.

How much time is allowed to attend religious services?

The cadet schedule-of-calls guarantees cadets the opportunity to attend scheduled services. During BCT there are daily devotions conducted by the Jewish, Catholic and Protestant chaplains. Worship services are scheduled every Sunday; and after BCT is completed, cadets may leave the Academy to attend a civilian church of their choice. Chapel services are not mandatory for cadets.

Is spiritual counseling available?

Yes, seven chaplains--one Jewish rabbi, two Catholic priests, and four Protestant chaplains from different denominations work directly with the cadets. During BCT the chaplains go everywhere the cadets go. During the year the chaplains are assigned to particular cadet squadrons and participate in squadron activities. Each squadron has a cadet chaplain representative who serves as a contact person between the chaplains and the cadets. The chaplains' offices are conveniently located in the cadet dormitory. For those cadets who wish to worship in a church of their own denomination, the chaplains' office can help contact one of the many churches in Colorado Springs. The chaplains are available to share and counsel you on any problems, whether they be Academy or family-related.

Will I be able to fly while at the Academy?

You will receive flights in a helicopter, Cessna T-41 and jet navigator trainer during BCT. There are also several other opportunities to fly while at the Academy. Soaring training is available to all cadets. If you plan to enter pilot training after graduation, you will be required to take a T-41 pilot indoctrination course as a firstclass cadet. You may take light plane training as an extracurricular activity and earn FAA ratings from private pilot through instructor pilot. However, you may not earn Air Force "wings" until you graduate and complete pilot training.

How much does it cost the government to graduate one cadet from the Air Force Academy?

An Air Force Academy education is equivalent to receiving a $150,000 scholarship.

If I play sports, do I get any special privileges?

Intercollegiate athletes occasionally receive extra passes to help compensate them for time spent at weekend competitions and practices. Intercollegiate athletes may be excused from class to participate in competitions; however, they are expected to maintain the required GPA. Special tutors often travel with the teams.

Opportunities After. . .

What are my career opportunities following graduation?

You may select from more than 80 major career areas in the operations, communications-electronics, computer technology, comptroller, civil engineering, logistics, intelligence, security police or scientific and development engineering disciplines, depending upon your qualifications. Many graduates make the Air Force a career, and serve in a variety of specialty areas during their 20 or more years of duty.

Will I be able to select my base of assignment after graduation?

Graduating cadets not going to flying training are permitted to indicate their job preferences, but the needs of the Air Force must come first.

Will I be able to fly as a career?

Approximately 65% of Academy graduates complete either pilot or navigator training. Most Academy graduates initially pursue flying assignments. Later they may pursue careers in other areas.

How long is the active duty commitment? Is it the same for women?

All Air Force Academy graduates must serve at least five years. Those who attend undergraduate navigator training (UNT) or undergraduate pilot training program (UPT) incur a longer service commitment after graduation from the one-year course. The length of commitment incurred is determined by current Air Force policy.

What is the commitment if you don't graduate?

If you were in the military service prior to becoming a cadet, you will return to your former rank and branch of service, and complete your remaining period of obligated service. The current Air Force policy for cadets who entered from civilian life requires those who resign on or after the first day of academics in the fall semester of their secondclass (junior) year to serve a two-year active duty service commitment. Those who resign during their firstclass (senior) year must serve a three-year active duty commitment. Those who complete the entire academic program and resign or refuse to accept a commission may be ordered to active duty for four years. No obligation is incurred by those who resign in their fourth- or thirdclass year. Those who resign and incur a commitment will normally be ordered to active duty in enlisted airman status.

Do I have to be a pilot?

No. There are more than 50 major career areas in nonflying specialties where graduates are assigned after graduation. These include scientific, engineering and technical areas.

Why can't I wear glasses or contacts and be a pilot?

Some waivers may be available for glasses; however, safety considerations currently prohibit the wearing of contact lenses while flying.

Can I go to graduate school after graduation?

Some cadets receive graduate school scholarships and fellowships for programs following graduation. The top graduates who do not receive scholarships are assured graduate education early in their careers. Selected officers will receive tuition, fees, full pay and allowances. Up to two percent of each graduating class may be sent directly to medical school. Selection for law school is on a competitive basis after you have completed at least two years on active duty.

View of cadet area from American Legion memorial.

PERSONNEL DIRECTORY

This directory includes personnel on duty during the 1985-1986 academic year.

Administrators

Superintendent
LT GEN WINFIELD W. SCOTT, JR.
BS, U.S. Military Academy; MA, Catholic University

Dean of the Faculty
BRIG GEN ERVIN J. ROKKE
BS, U.S. Air Force Academy; MS, PhD, Harvard University

Commandant of Cadets
BRIG GEN MARCUS A. ANDERSON
BS, U.S. Air Force Academy; MS, University of Southern California

Director of Athletics
COL JOHN J. CLUNE
BS, U.S. Naval Academy; MSEE, University of Southern California

Executive Officer
LT COL GEORGE A. DETUCCIO
BS, Syracuse University; MBA, University of Hawaii

Chief of Staff
COL ROBERT Y. FOERSTER
BS, U.S. Air Force Academy; MBA, Inter American University

Registrar
COL THOMAS C. WILKINSON
BS, U.S. Military Academy; MA, University of Oklahoma

Commander, USAF Academy Preparatory School
COL ADOLPHUS ANDREWS
BA, Howard University; MS, Southern Illinois University - Edwardsville; Ph
Ohio State University

Command Surgeon
COL MARSHALL S. COOK
BS, University of Nebraska; MD, University of Nebraska

Director of Protocol
LT COL JORGE E. REINOSO
BA, University of Miami, Florida; MS, University of Northern Colorado

Academy Staff

Deputy Chief of Staff/Plans & Programs
COL THOMAS E. SNODGRASS
BA, Grove City College; MA, University of Texas

Deputy Chief of Staff/Personnel
COL HARRY A. THOMAS, JR.
BS, University of Omaha

Deputy Chief of Staff/Comptroller
COL JOHN R. JAMES
BA, Occidental College

Deputy Chief of Staff/Civil Engineering
COL WILLETT R. STALLWORTH
BS, A&M College of Texas; MA, University of Southern California; MA, Troy State University

Deputy Chief of Staff/Logistics
COL DON E. WELLS
BA, San Jose State

Command Chaplain
COL WILLIAM W. CAMPBELL
BA, St. John's Seminary

Inspector General
LT COL JAMES B. DIXON
BA, MA, Howard University; MA, PhD, University of Arizona

Staff Judge Advocate
COL FRANKLIN P. FLATTEN
BA, LLB, St. Mary's University

Deputy Chief of Staff/Morale, Welfare & Recreation
COL ROBERT E. LEE, JR.
BA, Texas Tech; MA, American University

Deputy Chief of Staff/Information Systems
COL CARROLL A. CLABAUGH
MA, New Mexico State; PhD, Texas A&M

Director of Public Affairs
LT COL STEWART SCOTT DUNCAN
BS, U.S. Air Force Academy; MS, Boston University; MA, PhD, University of Southern California

Director of Administration
LT COL BARRY S. OSWELL
BS, Boston University; MA, Ball State University

Director of Alumni Programs
LT COL RICHARD M. COPPOCK, USAF (Ret)
BS, U.S. Air Force Academy; MS, University of Colorado

Director of Security Police
LT COL WILLIAM C. MILLER
BA, DePaul University; MA, Webster University

Commander, USAF Academy Band
COL Ronald W. Carl
BA, San Diego State College; MA, University of California - Riverside

Director of Social Actions
MAJ STEVEN CARMICHALL
BS, University of Colorado; MS, University of Colorado

Commander, HQ Squadron
MAJ LARRY J. HELLER
BA, Bloomfield College; MS, University of Utah

Director of Safety
MAJ DANNY L. WILLIAMS
BS, Ft. Lewis College

Command Historian
ELIZABETH A. MUENGER
BA, Oberlin College; MA, University of Michigan, PhD, University of Michigan

DEAN OF THE FACULTY

Dean of the Faculty; Permanent Professor
BRIG GEN ERVIN J. ROKKE--BS, U.S. Air Force Academy; MS, PhD, Harvard University

Vice Dean of the Faculty; Permanent Professor; Chairman of the Engineering Division
COL JOHN T. MAY--BS, U.S. Air Force Academy; MS, PhD, North Carolina State University

Associate Dean of the Faculty for Cadet Awards and Graduate Studies; Permanent Professor
COL MALHAM M. WAKIN--AB, University of Notre Dame; AM, State University of New York; PhD, University of Southern California

Director of Research and Computer Based Education; Tenure Associate Professor of Physics
LT COL THOMAS E. McCANN--BS, MS, North Texas State University; PhD, University of California, Davis

Director of Plans and Programs; Tenure Associate Professor of Computer Science
LT COL WILLIAM E. AYEN--BS, University of Wisconsin, Plattsville; MS, University of Missouri, Rolla; PhD, Ohio State University

Director of Studies and Analysis; Tenure Associate Professor of Econmomics
LT COL MICHAEL ANSELMI--BA, MS, University of Wyoming; MA, PhD, University of Colorado

Director of Programs; Assistant Professor of Civil Engineering
MAJ STEPHEN M. EVANS--BSCE, ME, University of Louisville

Faculty Executive; Tenure Associate Professor of History
MAJ JOE C. DIXON--BA, St. Olaf College; MA, Michigan State University; MBA, University of North Dakota; PhD, University of Mississippi

Faculty Support

Dean of the Faculty Squadron Section Commander; Director of Faculty Support
LT COL GARY R. COULTER--BA, University of Kansas; MS, Loma Linda University; PhD, Colorado State University

Dean of Faculty Squadron Section First Sergeant; Chief, Faculty Administration
CMSGT CHARLES R. MCDONALD

Chief, Facility and Equipment Control
MSGT TERRY M. CUNNINGHAM

Chief, Budget and Cost Control
MSGT GREGORY K. GARDNER

Chief, Faculty Personnel
TSGT RICKIE L. FADNESS

Academy Libraries

Tenure Director of Libraries; Associate Professor of German
LT COL REINER H. SCHAEFFER--BGS, University of Nebraska, Omaha; MPA, University of Missouri, Kansas City; PhD, Ohio State University

Assistant Director for Public Services
DONALD J. BARRETT--BS, College of St. Thomas; MA, University of Minnesota

Assistant Director for Technical Services
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Chief, Cataloging Branch
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Chief, Reference Branch
ELIZABETH C. KYSELY--BA, Colorado College; MA, University of Denver

Chief, Special Collections Branch
DUANE J. REED--BA, Washburn University

Chief, Systems Branch
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Catalogers
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AMES SMITH--BS, Westmar College; MSLS, Western Michigan University

Reference Librarians
LOUIS C. BASSETTI--BA, St. Joseph's College; MA, University of Denver
BETTY H. FOGLER--BA, University of Missouri; MA, University of Denver
MARY ELLEN YOUNG HAUG--BS, University of Florida; MLS, Florida State University
FLORENCE F. KLEMM--BA, Harding College; MA, University of Denver
STEVEN E. MAFFEO--BA, University of Colorado; MALS, University of Denver

Audiovisual Services

Director
LT COL BRUFORD L. DOYLE--BA, MA, University of New Mexico; EdD, Oklahoma State University

Curriculum and Scheduling Services

Director; Associate Professor of Chemistry
LT COL JOHN S. LANDERS--BS, U.S. Air Force Academy; MS, PhD, Michigan State University

Deputy Director; Associate Professor of Behavioral Sciences and Leadership
MAJ DEAN H. WILSON--BA, MA, University of Montana; PhD, US International University

Chief, Scheduling Division; Tenure Staff Officer; Associate Professor of Aeronautics
MAJ JOHN SHERFESEE--BS, MS, University of Arizona

Chief, Academic Affairs Division; Executive Officer; Assistant Professor of Biology
MAJ ILDIKO E. ANDREWS--BS, MS, University of California, Los Angeles, MS, University of Southern California

Academic Affairs Staff Officer; Assistant Professor of Aviation Sciences; Executive Officer
CAPT JAMES E. BOYNTON, JR --BS, Florida Memorial College; MS, State University of New York, Binghamton

Chief, Data Management Division
CAPT JOE L. THOMAS--BS, University of Connecticut; MS, Texas A&M University

Assistant Chief, Data Management Division
LT BARRET A. DIEHL--BBA, University of Texas, Austin

Education and Research Computer Center

Director; Assistant Professor of Computer Science
MAJ JONATHAN L. STEVENS--BS, U.S. Air Force Academy; MS, University of Texas

Deputy Director; System Manager, Mainframe Support Branch
MR EUGENE F. HAYS

Chief, Mainframe Software Support Branch; Instructor in Computer Science and Electrical Engineering
CAPT SCOTT E. FERGUSON--BS, U.S. Air Force Academy; MS, Air Force Institute of Technology

Systems Programmer
CAPT JAMES M. JOHNSON--BS, U.S. Air Force Academy; MS, George Washington University

Chief, Special Systems Software Support Branch
CAPT GEOFFREY C. MULLIGAN--BS, U.S. Air Force Academy

Chief, Mini/Micro Software Support Branch; Instructor in Computer Science
CAPT GLENN D. WATT, JR.--BS, Kutztown State College; MS, Lehigh University

Chief, Plans and Programs
CAPT ANDREW C. WINTER, II--BS, U.S. Air Force Academy

System Manager, Mini/Micro Software Support Branch; Instructor in Computer Science
LT ANNE C. OKULSKI--BS, MS, Bowling Green State University

Department of Aeronautics

Tenure Professor and Department Head
LT COL RICHARD C. OLIVER--BS, U.S. Air Force Academy; MS, Air Force Institute of Technology; PhD, University of New Mexico

Distinguished Visiting Professor
DR. WILLIAM H. HEISER--BSME, Cooper Union; MSME, California Institute of Technology

Tenure Associate Professor
LT COL GAREY T. MATSUYAMA--BS, U.S. Air Force Academy; MS, Air Force Institute of Technology; DE, University of Kansas

Associate Professors
LT COL THOMAS R. YECHOUT--BS, University of Minnesota; MS, University of Southern California; DE, MA, Central Michigan University; University of Kansas
MAJ FRED T. GILLIAM--BS, University of Tennessee; MS, Air Force Institute of Technology; PhD, University of Tennessee, Space Institute
MAJ TERRY A. HAMMOND--BS, U.S. Air Force Academy; ME, University of Florida; DE, University of Kansas
MAJ JACK D. MATTINGLY--BSME, MSME, University of Notre Dame; PhD, University of Washington
MAJ RANDALL J. STILES--BS, MS, University of Illinois; MBA, Northeastern University; PhD, Purdue University
MAJ ROBERT C. WINN--BS, MS, University of Illinois; PhD, Colorado State University

Assistant Professors
MAJ PAUL I. KING--BS, Arizona State University; MS, Air Force Institute of Technology
MAJ JOHN H. RUSSELL--BS, Auburn University; MS, Stanford University
MAJ FELIX SANCHEZ--BS, U.S. Air Force Academy; MS, Georgia Institute of Technology
CAPT DAVID R. CHAFFEE--BS, U.S. Air Force Academy; MS, Air Force Institute of Technology
CAPT WILLIAM W. HUMPHREYS--BS, MS, Oregon State University
CAPT RICHARD F. JUAREZ--BS, University of Kansas; MS, University of Texas; MBA, Wright State University
CAPT VAYL S. OXFORD--BS, U.S. Military Academy; MS, Air Force Institute of Technology
CAPT EFREN C. STRAIN--BS, MS, University of Hawaii
CAPT JON R. TURNER--BS, U.S. Air Force Academy; MS, Stanford University
CAPT LESLIE J. VEDITZ--BS, University of Michigan; MS, Air Force Institute of Technology
CAPT STEPHEN H. WALLINGFORD--BS, U.S. Air Force Academy; MS, Purdue University; MBA, Rensselaer Polytechnic Institute
CAPT JOHN M. YARGER--BS, U.S. Air Force Academy; MS, Air Force Institute of Technology

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MAJ CHARLES H. LONGNECKER--BS, U.S. Air Force Academy; MS, Michigan State University
MAJ VINCENT M. PARISI, II--BS, U.S. Air Force Academy; MS, Air Force Institute of Technology; MS, University of Southern California
CAPT GERALD D. ALLEN--BS, MS, Purdue University
CAPT DOUGLAS H. BARLOW--BS, U.S. Air Force Academy; MS, University of Washington
CAPT MICHAEL H. BOHUN--BS, Purdue University; MS, Air Force Institute of Technology
CAPT AARON R. BYERLEY--BS, U.S. Air Force Academy; MS, Stanford University
CAPT WAYNE F. HALLGREN--BS, U.S. Military Academy; MS, University of Florida
CAPT SUSAN J. HELMS--BS, U.S. Air Force Academy; MS, Stanford University
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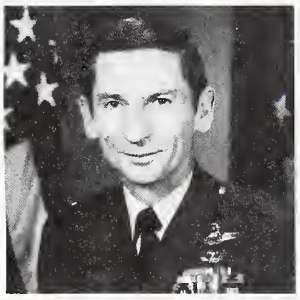
MAJ JAMES ROTGE--BS, University of Arizona; MS, University of New Mexico
MAJ GERALD L. SHAW--Lecturer in Astronautics--BS, University of Maine; MS, Georgia Tech University; PhD, Stanford University
MAJ JOHN M. WALKER--BS, MS, Texas A&M University
CAPT DANIEL FREDAL--BS, BSE, University of Nevada, Las Vegas; MSEE, Air Force Institute of Technology
2ND LT LUKE M. SIMCIK--BS, U.S. Air Force Academy
DR. GEORGE A. BROST--BS, University of Wisconsin, Stevens Point; MS, PhD, Washington State University
BILL J. SIMMONS--BS, MS, University of Oklahoma

COMMANDANT OF CADETS



Commandant of Cadets
BRIG GEN MARCUS A. ANDERSON--BS, U.S. Air Force Academy; MS, University of Southern California

Vice Commandant of Cadets
COL JOSEPH L. COATES--BS, U.S. Air Force Academy; MS, George Washington University

Executive to the Commandant
MAJ LARRY A. SMITH--BS, U.S. Air Force Academy; MS, Troy State University

Director of Honor and Ethics
MAJ MICHAEL OONK--BS, U.S. Air Force Academy; MS, University of Arkansas

Commander, Commandant of Cadets Squadron, Assistant Professor
MAJ THOMAS J. BERRY, JR--BS, U.S. Air Force Academy; MPA, Golden Gate University

Deputy Commandant For Military Instruction

Deputy; Permanent Professor
COL PHILIP D. CAINE--BA, Denver University; MA, PhD, Stanford University

Assistant
MAJ JERRY L. MELCHISEDECK--BA, Eastern Washington University; MA, University of Northern Colorado

Special Assistant for Honor
CAPT WILLIAM R. KNELLINGER--BS, U.S. Air Force Academy

Sergeant Major
CMSGT WILLIAM R. NAPIER--AS, Community College of the Air Force; BS, Wayland Baptist University; MA, University of Oklahoma

Military Studies Division

Associate Professor and Chief
LT COL JAMES W. TITUS--BS, State University of New York, Buffalo; MA, University of Oklahoma; PhD, Rutgers University

Assistant Professor and Deputy Chief
MAJ EDMUND A. ORDZIE--BS, U.S. Air Force Academy; MS, U.S. International University

Assistant Professors
MAJ EARL F. PHIPPEN--BS, MS, Utah State University
CAPT JESSIE L. JOHNSON--BS, Chapman College; MBA, University of Nebraska
CAPT ROY W. LOWER--BS, U.S. Air Force Academy; MA, California State University, Stanislaus
CAPT ROGER L. SMITH--BS, U.S. Air Force Academy; MBA, University of Northern Colorado
CAPT PATRICK M. ST. ROMAIN--BS, University of Southern Mississippi; MS, Troy State University
CAPT LAWRENCE E. ULLO--BA, Laverne College; MA, University of Northern Colorado
CMSGT WILLIAM R. NAPIER, JR--BS, Wayland University; MA, Oklahoma University

Instructors
MAJ WILLIAM R. CRAIG--BA, Kent State University; MA, Webster University
MAJ JEROME V. MARTIN--BS, U.S. Air Force Academy; MS, Troy State University; PhD, Ohio State University
SQN LDR PETER R. DIXON (British Exchange Officer)--BSc, Bristol University, England
CAPT GARY J. ARCHAMBAULT--BS, University of Wisconsin; MS, U.S. International University
CAPT JOSEPH L. BREZOVIC, JR--BS, U.S. Air Force Academy; MS, North Dakota State University
CAPT WILLIAM M. COLLINS--BS, Troy State University; MS, Emory Riddle Aeronautical University

CAPT MARIO A. GARZA--BS, U.S. Air Force Academy; MS, University of Southern California
CAPT SEIICHI HASHIMOTO (Japanese Exchange Officer)--Japanese Defense Academy
CAPT NEIL F. HASSON--BS, U.S. Military Academy; MBA, Pepperdine University; MA, Naval Postgraduate School
CAPT WOODROW T. HAWLEY--BA, South Dakota State University; MPA, University of Northern Colorado
CAPT BRETT R. McINTIRE--BS, U.S. Air Force Academy; MBA, Golden State University
CAPT DARLA M. ROBERTS--BS, University of Illinois; MS, University of West Florida
CAPT ROBERT SUTLEY--BS, U.S. Air Force Academy; MS, University of Southern California
CAPT STEPHEN S. WHITSON--BS, MS, Florida State University

Military Training Division

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LT COL BEN G. DUNN--BS, U.S. Air Force Academy; MBA, Auburn University

Professional Military Training Branch

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MAJ WILLIAM H. OLDENBURG, II--BS, U.S. Air Force Academy; MBA, Golden Gate University

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MAJ JAMES E. SCULLY--BS, U.S. Air Force Academy; MBA, Webster University

Director, Firstclass Training
CAPT JAMES R. DART--BS, U.S. Air Force Academy; MS, Central Missouri State University

Director, Secondclass Training
CAPT WILLIAM K. FREY--BS, U.S. Air Force Academy; MBA, University of South Dakota

Director, Thirdclass Training
CAPT WILLIAM T. O'CONNELL--BS, U.S. Air Force Academy; MS, University of Arkansas

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Chief, Cadet TDY Programs
CAPT ARMANDO A. HERNANDEZ--BS, University of South Carolina

Chief, Basic Cadet Training
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Chief, Technical Applications
CAPT HOWARD T. HORII--BS, Colorado State University; MBA, Abilene Christian University

Military Training Assignments
CAPT ANTHONY L. FIGALLO--BS, Louisiana State University
A1C DANNY R. LOVETTE
MS PATRICIA J. FOX

Survival, Evasion, Resistance and Escape (SERE)
CMSGT PETER KUMMERFELDT--AAS, Community College of the Air Force
TSGT ANDREW M. CONARD--AAS, Community College of the Air Force
TSGT MICHAEL A. BAIRD--BBA, Texas Technical University
MR GENE V. WINGER

Combat Arms Training and Maintenance (CATM)
MSGT JAMES W. DUNN
SSGT ANDREW MUELLER
SRA DENNIS D. CHANEY

50th Airmanship Training Squadron

Commander
LT COL JAMES PINKERTON, JR--BA, Rutgers University; MA, Chapman College

Operations Officer
MAJ THOMAS J. BERRY--BS, U.S. Air Force Academy; MPA, Golden Gate University

Chief, Squadron Stan/Eval
MAJ DAVID L. ALBERT--BA, Pennsylvania State University; MA, Webster University

Executive Officer
CAPT MICHAEL P. GEGG--BS, U.S. Air Force Academy; MA, Webster University

Flight Commanders
MAJ LARRY O. ANDERSON--BS, Arkansas University; MS, Michigan State University
MAJ RANDALL E. BROOKS--BS, Ohio State University; MS, Troy State University
MAJ ELIZABETH A. KOCH--BA, University of Florida; MA, Chapman College
CAPT DARELL D. GILLESPIE--BS, University of Nebraska; MA, Webster University

Course Directors
CAPT KEVIN M. MARTIN--BS, U.S. Air Force Academy
CAPT HAROLD McKINNEY--BA, Kentucky University; MA, Louisiana Tech University
CAPT RANDALL R. SCHMIDT--BA, Park College
CAPT ROBERT N. SHEARER--BA, MA, Brigham Young University

Instructors
CAPT GLENN L. HARMON--BA, East Carolina University; MS, Vanderbilt University
CAPT CLAUDE E. WATTERS, III--BS, U.S. Air Force Academy
CAPT JAMES D. WHEELER--BS, Florida State University; MA, Webster University
CAPT GLENN VERA--BS, U.S. Air Force Academy; MS, University of Arkansas
CAPT WAYNE A. SCHIEFER--BS, University of Iowa

Planetarium
SSGT RICHARD D. CHEEK
SSGT NATHANIEL A. KNIGHT
MR MICKEY D. SCHMIDT--BS, Fort Hayes State University; MA, Adams State College

Training Devices
CMSGT PAUL N. FLING--AS, State University of New York
MSGT LEONARD L. GAUTHIER--AS, Community College of the Air Force; BS, Troy State University
SSGT ROBERT E. ALDRICH
SSGT JOHN H. PROVENCAL
SSGT STEVEN D. HICKEY
SGT DAVID W. ZONDOR
SRA STEVEN A. ZLOGAR

Deputy Commandant for Operations

Deputy
COL JOHNNIE H. HALL--BS, U.S. Air Force Academy; MA, Troy State University

Special Assistant
CAPT RALPH R. BAKER--BS, Northeast Louisiana University

Operations Division

Chief
LT COL JOHN P. EATON--BA, MA, Loyola University

Chief, Plans and Programs Branch
MAJ JACKIE L. FOSTER--BS, East Texas State University; MA, Webster University

Chief, Navigation Standardization/Evaluation Branch
MAJ ORA J. GIBSON--BA, Grambling University; MS, Texas Christian University

Chief, Soaring Pilot Standardization/Evaluation Branch
CAPT TIMOTHY J. TAYLOR--BS, U.S. Air Force Academy

Chief, Pilot Standardization/Evaluation Branch
CAPT RANDY P. OCKMAN--BA, Nichols State University; MA, Webster University

Chief, Flight Management Branch
CAPT DANIEL R. PRICE--BS, U.S. Air Force Academy

Chief, Cadet Pilot Selection
CAPT MICHAEL D. LEE--BS, U.S. Air Force Academy

557th Flying Training Squadron

Commander
LT COL EDWIN D. GUNTER, JR--BS, U.S. Air Force Academy; MS, Peabody College

Special Assistant
CAPT GEORGE G. BORDON--BSAE, U.S. Air Force Academy

Operations Officer
LT COL RONALD W. PAINE--BA, Kearney State; MBA, Oklahoma State University

Assistant Operations Officer
CAPT MARK A. ESTEP--BBA, University of Iowa; MA, Central Michigan University

Chief, Pilot Instructor Branch
MAJ ROY PENCE, JR--BS, U.S. Air Force Academy; MA, Oklahoma State University

Flight Safety Officer
CAPT LEE JENNINGS--BA, University Of New Mexico; MS, Troy State University

Chief, Check Station
MAJ GARY E. RATTRAY--BS, University of Maine; MS, Air Force Institute of Technology

Chief, Scheduling
CAPT KENNETH L. WEAVER--BS, U.S. Air Force Academy

Training Officer
CAPT BARRY S. GAMBLIN--BS, University of Colorado at Colorado Springs

Chief, Unit Administration
MSGT MICHAEL J. DODD--BS, University of Montana

Dispatcher
SSGT HOSEA HARRELL, JR

Section Commanders
MAJ BRUCE B. McELROY--BS, U.S. Air Force Academy; MS, University of Southern California
LCDR STEPHEN HAGBERG--BS, University of Colorado at Colorado Springs

Flight Commanders
CAPT GREGORY A. BRICKER--BS, U.S. Air Force Academy
CAPT GEORGE B. KNOLL--BS, U.S. Air Force Academy
CAPT JEFF T. HASS--BS, U.S. Air Force Academy
CAPT LYNN W. HAMMOND--BS, California State University

Instructors
CAPT THOMAS C. ARATA--BS, U.S. Air Force Academy
CAPT GREGORY D. AUGST--BS, U.S. Air Force Academy
CAPT PAUL L. BECK--BS, U.S. Air Force Academy
CAPT DAVID C. BOWLING--BS, U.S. Air Force Academy
CAPT DAVID BUNECKE--BS, U.S. Air Force Academy
CAPT ERIC H. CAPPEL--BS, Louisiana State University
CAPT STANLEY C. CORREIA--BS, U.S. Air Force Academy
CAPT DAVID B. FALLON--BS, U.S. Air Force Academy
CAPT MICHAEL A. FLECK--BS, Florida International University
CAPT THOMAS W. GUIRY--BBA, University of Miami, Florida
CAPT OLIVER W. HARRISON--BS, U.S. Air Force Academy
CAPT DAVID W. LESTER--BS, Western Illinois University
CAPT RUTH A. MEYER--BS, Central Missouri State University
CAPT KEVIN J. O'TOOLE--BS, U.S. Air Force Academy
CAPT DOUGLAS H. OWENS--BS, U.S. Air Force Academy
CAPT MICHAEL G. PADGETT--BS, U.S. Air Force Academy
CAPT ANTONIO L. PALA--BS, Florida International University
CAPT RAYMOND F. PHELAN--BS, San Jose State University
CAPT JAMES C. REGAN, III--BS, U.S. Air Force Academy
CAPT RICHARD A. RIES--BS, University of Lowell
CAPT RANDY G. ROTHE--BS, U.S. Air Force Academy
CAPT KERRY D. SCHMIDT--BS, U.S. Air Force Academy
CAPT THOMAS M. WALLACE--BS, Radford College
CAPT KENNETH L. WEAVER--BS, U.S. Air Force Academy
CAPT WILLIAM K. WOLFE--BS, University of Arkansas

94th Airmanship Training Squadron

Commander
LT COL JAMES A. SHAW--BS, U.S. Air Force Academy; MA University of Arizona; MBA Auburn University

Operations Officer
MAJ LAWRENCE R. VERROCHI--BS, U.S. Military Academy; MA, Webster University

Assistant Operations Officer
CAPT SANDRA M. SCOTT--BS, Oregon State University; MA, Chapman College

Soaring Training Flight

Commander
MAJ CHARLES C. FLYNN--BS, U.S. Air Force Academy

Soaring Instructors
CAPT CALVIN L. ALLEN--BS, U.S. Air Force Academy
CAPT STEVEN BELL--BS, Concord College
CAPT HANS A. BUSS--BS, U.S. Air Force Academy
CAPT LINDSAY BUTLER--BS, U.S. Air Force Academy
CAPT KENNETH M. FINN--BS, U.S. Air Force Academy
CAPT JAMES D. HAGEDORN--BS, U.S. Air Force Academy; MS, University of Southern California
CAPT EDWARD J. JILEK--BA, University of Minnesota
CAPT ROGER D. JOHNSON--BA, Brigham Young University
CAPT MARK C. KARGUL--BS, U.S. Air Force Academy
CAPT LINDA K. McTAGUE--BA, MS, Florida International University; AA, AGS, Kellogg Community College
CAPT RAYMOND B. MORGAN--BA, University of Tennessee
CAPT SIGSBEE J.B. NELSON--BS, U.S. Air Force Academy; MS, University of Southern California
CAPT ROY A. POOLE--BA, California State University, Fullerton
CAPT SCOTT A. SKILLINGTON--BS, University of Missouri, Columbia
CAPT DAVID WEAVER--BS, University of Florida

Parachute Training Flight

Commander
MAJ STEWART METCALFE--BA, University of Nebraska; MA, Webster College

Parachute Instructors
CAPT KARL E. SCHNEIDER--BA, Oklahoma State University
CMSGT MICHAEL E. COPPLE--BA, Chapman College; AA, Community College of the Air Force
MSGT CRAIG A. SEYMORE--AA, Community College of the Air Force
MSGT EDWARD B. STRANGE--AA, Community College of the Air Force
TSGT DAYTON A. BONADIE--AA, University of Tampa; BS, Regis College
TSGT VANCE H. DURHAM--BS, Regis College
SSGT WEST C. JACOBS
SSGT MITCHELL J. LAABS
SSGT GERALD P. MONTGOMERY
SSGT PATRICK M. SCHRAUNAGEL
SSGT DOUGLAS A. STAPLES
SSGT JOEL K. WILLIAMSON
SGT MARK W. POWER
AIC ROBERT W. VonDERAU

Aviation Flight

Commander
CAPT GEORGE L. COX, JR--BA, University of Guam

Support Flight

Commander
MAJ CHARLES P. GALLAGHER--BS, BA, MS, University of Florida

Life Support Instructors
SSGT GLENN A. EFFLER
SSGT RICKY A. ZICK

Detachment 1

Commander
MAJ PATRICK J. ROONEY--BS, U.S. Air Force Academy; MS, University of Southern California

Pilots
CAPT WILLIAM M. HATFIELD--BS, Miami University; MA, Central Michigan University; MS, Southern Illinois University
CAPT MICHAEL W. McWILLIAMS--BS, Metropolitan State College; MS, Texas Christian University

Deputy Commandant for the Cadet Wing

Deputy
COL LONNY R. ALEXANDER--BS, Colorado State University

Assistants
LT COL BRUCE A. BLEAKLEY--BS, University of Tulsa
MAJ WILLIAM F. PORTER--BS, U.S. Air Force Academy; MS, BA, Boston University
MAJ DAVID P. SHANAHAN, JR--BS, U.S. Air Force Academy; MA, Golden Gate University

Sergeant Major for the Cadet Wing
CMSGT JOSEPH E. L'HEREAULT

Group 1

Group Air Officer Commanding (AOC)
LT COL CHARLES L. BUZZE--BA, The Citadel

AOCs, Squadrons 1-10
CAPT BRUCE A. BRANT (USA)--BS, MEd Texas A&M University
CAPT DUANE A. JONES--BS, U.S. Air Force Academy; MA, Webster University
MAJ GEORGE W. BUSH--BS, Bishop College; MA, Ball State University
MAJ JUDY W. LINDSAY--BA, Mercyhurst College; MA, Webster College
CAPT MARK A. WELSH, III--BS, U.S. Air Force Academy
CAPT MARK A. HYATT--BS, U.S. Air Force Academy; MA, Arizona State University
MAJ MICHAEL D. SINGER--BA, St Norbert College
MAJ ARTHUR W. SCHALL, JR--BS, U.S. Air Force Academy; MA, Oklahoma State University
CAPT JOSEPH P. STEIN--BS, U.S. Air Force Academy; MS, University of Southern California
MAJ ROBERT B. MANNING--BS, U.S. Air Force Academy; MS, University of California

Group 2

Group AOC
LT COL DAVID A. OVERCAST--BS, University of Montana

Deputy Group AOC
LT COL RICKEY L. GARRISON--BS, University of Tulsa; MA, Arkansas State University

AOCs, Squadrons 11-20
MAJ ALAN D. KOCH--BS, Kansas State University; MBA, Chapman College
MAJ GEORGE D. POLLARD--BS, U.S. Air Force Academy; MS, University of Arkansas
MAJ JIM DOTSON--BA, California State University; MA, Pepperdine University
MAJ HEDY C. PINKERTON--BS, Northwestern State University; MA, Troy State University
MAJ BRADLEY K. HIGGINBOTHAM--BS, U.S. Air Force Academy; MS, University of Southern California
MAJ LOREN C. AINSWORTH--BS, U.S. Air Force Academy
MAJ JACK R. TRIMBLE--BS, U.S. Air Force Academy; MA, New Mexico State University
MAJ DANIEL PETERJOHN (USA)--BA, U.S. Military Academy
MAJ RANDALL R. CANTRELL--BS, The Citadel; MA, Clemson University
MAJ STEPHEN R. MARTIN--BA, Pepperdine University

Group 3

Group AOC
LT COL BART C. HOGAN--BS, Utah State University; MA, Webster University

Deputy Group AOC
LT COL RICHARD M. ANGLEMYER--BBA, University of Cincinnati; MBA, Phillips University

AOCs, Squadrons 21-30
MAJ DAVID J. KLEIN--BS, U.S. Air Force Academy; MT, Arizona State University
MAJ DONALD B. MacNIVEN--BS, U.S. Air Force Academy; MA, Webster College
MAJ MARGARET M. STANEK--BA, Wheeling College; MA, Central Michigan University
MAJ STEVEN O. SMITHERMAN--BS, U.S. Air Force Academy; MBA, Renssalaer Polytechnic Institute
MAJ ROBERT T. WEBER (USMC)--BS, California State University, San Jose
MAJ WAYNE R. WILLIAMSON--BA, State University of New York, Buffalo; MS, Troy State University
MAJ ROBERT C. BROWN--BS, U.S. Air Force Academy; MS, Wichita State University
MAJ JAMES E. SCULLY--BS, U.S. Air Force Academy; MBA, Webster University
MAJ THOMAS H. SAUNDERS, JR--BS, U.S. Air Force Academy; MPA, Webster University
MAJ WILLIAM E. CROWE, JR--BS, The Citadel; MS, University of Southern California

Group 4

Group AOC
LT COL ROBERT A. LOWE--BS, U.S. Air Force Academy; MS, University of Utah

Deputy Group AOC
LT COL JOHN E. HAYDEN--BS, U.S. Air Force Academy; MBA, Oklahoma City University

AOCs, Squadrons 31-40
MAJ NORMAN W. GOODYEAR--BS, Arizona State University
MAJ PATRICK K. GARVEY--BS, U.S. Air Force Academy; MS, Boston University
MAJ SIDNEY R. THURSTON--BS, Kansas State University; MA, Pepperdine University
CAPT THOMAS E. SCANLIN--BA, University of Iowa; MBA, University of Colorado
MAJ BETTYE J. PAYNE--BS, University of Illinois; MA, Webster University
LT COL LARRY M. CHADWICK--BS, University of Oklahoma; MA, Webster University
CAPT DAVID A. LaFAVE--BS, U.S. Air Force Academy; MSSM, University of Southern California
MAJ JOHN M. PRETZ--BS, U.S. Air Force Academy; MS, Embry-Riddle Aeronautical University
CAPT STEPHEN M. SOUTHER--BS, The Citadel; MA, University of LaVerne
MAJ DONALD L. WALKER--BS, U.S. Air Force Academy; MBA, Webster University

Cadet Wing Policy Division

Chief
MAJ JOHN D. OTTINO--BS, University of Southern Colorado; MA, University of Northern Colorado
CAPT ROBERT E. WORLEY--BS, Embry-Riddle Aeronautical University
CAPT CARL D. JONES--BS, William Carey College

Deputy Commandant for Resources

Deputy
COL JAMES D. MANNING, JR--BS, U.S. Air Force Academy; MBA, University of Colorado, Colorado Springs

Plans, Policy and Budget Division

Chief
LT COL BARRY A. BLACKMAN--BS, U.S. Air Force Academy; MBA, Pepperdine University

Budget Assistant
MS SHARYN McGRATH

Plans and Policy Branch

Chief
MAJ JACK D. MUELLER--BS, U.S. Air Force Academy
MAJ JOSEPH R. MITCHELL, JR--BS, U.S. Air Force Academy; MS, University of Southern California

Cadet Wing Safety Officer
CAPT DORIAN SMITH--BSEE, U.S. Air Force Academy

Safety NCO
SSGT DONNA S. SPURGEON

Cadet Airlift Support Branch

Chief
MAJ HECTOR M. MARQUEZ--BA, Southwest Texas State University
SRA VALERIE TRISSELL

Cadet Scheduling and Systems Management Division

Chief
URBAN J. TURZI, JR--BS, St Joseph's University

Directorate of Cadet Logistics Support

Director
LT COL HUGH A. GARLAND--BA, Baylor University; MS, Troy State University

Cadet Logistics Officers
CAPT MICHAEL E. ADAMS--BS, Brigham Young University
CAPT TIMOTHY D. ZIEGLER--BS, Aquinas College
CAPT ROBERT RAMSEY, SR--BS, Florida A&M University
1ST LT DOUGLAS A. NELSON--BS, Troy State University

Directorate of Cadet Personnel Services

Director
MAJ LEON L. WALKER--BS, University of California, Fresno; MS, University of South Dakota

Chief, Cadet Activities
CAPT MARGARET L. PARKHILL--BBA, Texas Tech University; MS, University of Southern California

Chief, Cadet Wing Media
CAPT BILLY E. BIRDWELL--BA, Southwest Texas State University

Cadet Wing Hostess
MRS LOUISE BROWN--BS, Michigan State University

Chief, Extracurricular/Support
MS BILLIE J. FENDER

Chief, Cultural Arts and Entertainment
MR MILES B. KESSLER--BFA, Cornell University; MA, University of Denver

DIRECTORATE OF ATHLETICS

Director
COL JOHN J. CLUNE--BS, U.S. Naval Academy; MSEE, University of Southern California

Deputy Athletic Director for Intercollegiate Sports
COL EDWIN R. CLIATT--BS, University of Maryland; MS, University of Michigan

Comptroller
JERRY SAYLES

Chief, Facilities and Support Division
LT COL DAVID R. SCHICHTLE--BA, MA, University of Kansas

Business Manager
LT COL JOHN M. GIANNONI--BBA, Hofstra University; MS, Troy State University

Executive Officer
GARY W. SMITH--BGS, University of Nebraska, Omaha; MA, Webster University

Director, Sports Information
TO BE NAMED

Assistant Director of Athletics for Candidate Counseling
JAMES N. BOWMAN--BS, University of Michigan

Physical Education Division

Deputy Athletic Director, Physical Education/Facilities
COL MICHAEL P. BLAISDELL--BS, U.S. Air Force Academy; MS, University of Southern California

Assistant Athletic Director, Physical Education; Associate Professor of Physical Education
LT COL LOUIS A. BURKEL, III--BS, University of Nebraska; MS, University of Northern Colorado

Staff Officers

Chief, Analysis Division; Professor of Physical Education
LT COL PHILIP R. ELLIOTT--BS, MS, University of Tennessee; PhD, University of New Mexico

Chief, Intramural Division; Associate Professor of Physical Education
LT COL PAUL K. MARUYAMA--BS, San Jose State University; MBA, University of Hawaii

Chief, Instruction Division
MAJ DENNIS R. RAMSEY--BS, Brigham Young University

Associate Professors
ARNE U. ARNESEN--BS, University of Wisconsin; MEd, Springfield College
MAJ RICHARD F. GUGAT--BA, San Jose State University; MA, University of Denver
MAJ STEVE L. MILES--BS, Tennessee State University; MA, University of Denver
MAJ JOE E. ROBISON--BS, MS, Baylor University

Assistant Professors
CAPT KELVIN KEMP--BS, U.S. Air Force Academy; MS, University of Southern California
JOHN MATCHEFTS--BS, University of Michigan
CAPT WILLIAM D. PEER--BA, MA, Ohio State University
LUIS A. SAGASTUME--BS, University of San Francisco; MA, California State University, Chico
CAPT ALFRED P. TRETTER, JR--BS, MS, Southern Illinois University
EDWARD J. WEICHERS, JR--BS, West Chester State College; MS, University of Denver

Instructors
MAJ CHARLES A. KENNEDY--BS, U.S. Air Force Academy; MS, University of Southern California
MAJ JAMES L. OESER--BS, Arizona State University; MS, Troy State University
LT JOHN CIESLEWICZ (USN)--BA, Bucknell University
CAPT CHARLES DELICH--BS, U.S. Air Force Academy; MS, University of Southern California
CAPT ANDREW FOWKES--BS, Pennsylvania State University
CAPT MALCOLM D. GRIMES--BA, Virginia Military Institute
CAPT FRANKLIN C. GROSS--BA, Adams State College; MS, University of Denver
CAPT JAMES P. HANLEY--BS, Southern Connecticut State University
CAPT MICHAEL E. HITTLE (USA)--BS, Defiance College; MA, Webster University
CAPT JAMES R. HOGUE--BS, U.S. Air Force Academy
CAPT RICHARD L. LAMPRIGHT--BS, MS, Mankato State University
CAPT WILLIAM M. LINDSAY--BS, Oregon State University
CAPT KARL R. OLSEN--BS, U.S. Air Force Academy
CAPT PATRICK S. PETOSA--BS, Hobart College
CAPT GEORGE S. PUGH, JR--BS, Southern Illinois University; MS, University of Southern California
CAPT AUGUST G. SCHALKHAM--BS, MS, Southern Illinois University, Edwardsville
CAPT KATHERINE M. SCHERBERGER--BS, East Tennessee State; MS, Troy State University
CAPT VICTOR B. SUMMERS--BS, U.S. Air Force Academy
CAPT ROBERT J. TREGO--BS, South Dakota State University; MA, University of Northern Colorado
CAPT WILLIAM D. YOUNG--BS, Massachusetts Institute of Technology
LT PATRICIA K. SWANKE--BS, U.S. Air Force Academy
SSGT DEREK PHILLIPS--Community College of the Air Force
CHERYL N. BOTZONG--BA, University of California, Los Angeles
JACK D. BRALEY--BS, University of Nebraska
MARTHA A. GASSER--BS, Ohio State University; MEd, University of Cincinnati
MARYANN KLISARES--BA, St. Ambrose College; MA, University of Northern Iowa

Intercollegiate Division

Head, Intercollegiate Division
LT COL MICKI KING HOGUE--BS, University of Michigan; MA, Arizona State University

MEN'S INTERCOLLEGIATE ATHLETICS

Football Head Coach
FISHER DeBERRY--BA, Wofford College; MEd, University of Pittsburgh

Assistant Coaches
LT COL DICK ELLIS--BS, U.S. Air Force Academy; MS, Texas A&M University; PhD, University of Denver
CAPTAIN RICHARD BROWN--BS, U.S. Air Force Academy, MS, Gonzaga University
CAPT DARRELL G. MASTIN--BS, U.S. Air Force Academy; MEd, South Dakota State; MA, University of Oklahoma
CAPT CARL RUSS--BA, University of Michigan
JACK D. BRALEY--BS, University of Nebraska
JIM GROBE--BS, MEd, University of Virginia
BRUCE JOHNSON--BA, Wofford College
CAL McCOMBS, II--BS, Citadel University; MEd, University of South Carolina
GEORGE MILLER--BA, Cortland State University; MS, University of Bridgeport
BOB NOBLITT--BA, Washburn University; MS, Southern Illinois University
KEN RUCKER--BS, Carson-Newman College
SAMMY STEINMARK--BS, University of Wyoming
CHARLIE WEATHERBIE--BA, Oklahoma State University

Basketball Head Coach
W. "REGGIE" MINTON--BA, Wooster College

Assistant Coaches
DAN KRAFT--BS, U.S. Air Force Academy; MBA, University of Missouri, Columbia
PAUL F. DRAKE--BS, MEd, Springfield College
MAJ MARK ENGLEBRETSON--BS, U.S. Air Force Academy; MA, Chapman College, MA, St. Mary's University
CAPT TIMOTHY A. HARRIS--BS, U.S. Air Force Academy

Hockey Head Coach
JOHN MATCHEFTS--BS, University of Michigan

Assistant Coaches
CAPT CHARLES DELICH--BS, U.S. Air Force Academy; MS, University of Southern California
JORDY BOWMAN--BA, New England College

Baseball Head Coach
MAJ JOE E. ROBISON--BS, MS, Baylor University

Cross Country Head Coach
CAPT ROBERT J. TREGO--BS, South Dakota University; MA, University of Northern Colorado

Diving Head Coach
LT COL MICKI KING HOGUE--BS, University of Michigan; MA, Arizona State University

Fencing Head Coach
CAPT WILLIAM LINDSAY--BS, Oregon State University

Golf Head Coach
CAPT VICTOR B. SUMMERS--BS, U.S. Air Force Academy

Gymnastics Head Coach
MAJ DENNIS R. RAMSEY--BS, Brigham Young University

Indoor Track Head Coach
MAJ STEVE L. MILES--BS, Tennessee State University; MA, University of Denver

Lacrosse Head Coach
CAPT PATRICK S. PETOSA--BA, Hobart College

Pistol Head Coach
SSGT DEREK PHILLIPS--Community College of the Air Force

Rifle Head Coach
CAPT GARY SMITH--BGS, University of Nebraska, Omaha; MA, Webster University

Soccer Head Coach
LUIS SAGASTUME--BS, University of San Francisco; MA, California State University, Chico

Swimming Head Coach
CAPT KELVIN KEMP--BS, U.S. Air Force Academy; MS, University of Southern California

Tennis Head Coach
MAJ RICHARD GUGAT--BA, San Jose State University; MA, University of Denver

Track Head Coach
MAJ STEVE L. MILES--BS, Tennessee State University; MA, University of Denver

Water Polo Head Coach
CAPT JAMES HOGUE--BS, U.S. Air Force Academy

Wrestling Head Coach
MAJ JAMES OESER--BS, Arizona State University; MS, Troy State University

WOMEN'S INTERCOLLEGIATE ATHLETICS

Basketball Head Coach
MARTHA A. GASSER--BS, Ohio State University; MEd, University of Cincinnati

Cross Country Head Coach
CAPT AUGUST SCHALKHAM--BS, MS, Southern Illinois University

Diving Head Coach
LT COL MICKI KING HOGUE--BS, University of Michigan; MA, Arizona State University

Fencing Head Coach
CAPT WILLIAM LINDSAY--BS, Oregon State University

Golf Head Coach
MAJ JONATHAN L. STEVENS--BS, U.S. Air Force Academy

Gymnastics Head Coach
CHERYL BOTZONG--BA, University of California, Los Angeles

Swimming Head Coach
CAPT KELVIN KEMP--BS, U.S. Air Force Academy; MS, University of Southern California

Tennis Head Coach
LT LYNN GRIMMIG--BS, University of Hawaii

Track Head Coach
MAJ STEVE L. MILES--BS, Tennessee State University; MA, University of Denver

Volleyball Head Coach
CAPT WILLIAM PEER--BA, MA, Ohio State University

DIRECTORATE OF ADMISSIONS AND REGISTRAR

Registrar
COL THOMAS C. WILKINSON--BS, U.S. Military Academy; MA, University of Oklahoma

Deputy Chief, Minority Affairs
CAPT STEPHEN C. ORNELLAS--BA, Fresno State; MA, California State University, Dominguez

Director of Selections
MAJ DANIEL E. HANCOCK--BS, U.S. Air Force Academy; MS, North Carolina State University

Course Descriptions

Courses offered in the curriculum including core and majors courses.

Descriptions of the courses to be offered during the next academic year are listed here by subject in alphabetical order. Course numbers have a general meaning. The first digit of a course number normally indicates the class year for which the course is designed: 100 series for the fourthclass year, 200 series for the thirdclass year, 300 series for the secondclass year, and 400 series for the firstclass year.

Following the title of each course is a code such as 1(2). The number before the parentheses is the course unit value which is used to determine a cadet's course load for a semester and on which minimum graduation requirements are based. A "0" before the parentheses means that the course has no course unit value. The number within the parentheses is a code indicating the contact hours and scheduling pattern for the course.

A "*" designation on the right side of the parentheses means that an honors version of this course is offered. Not all honors versions are offered both fall and spring semesters. Final examination or final report requirements, course prerequisites, semester hours and offering times are shown at the end of each course description. A number of academic courses are offered in both the fall and spring semesters.

AERONAUTICS (Aero)

Offered by the Department of Aeronautics (DFAN)

Aero 311. Fundamentals of Aeronautics. 1(1)*
History. Introductory fluid mechanics. Airfoil and wing aerodynamics. Steady and accelerated aircraft performance. Stability and control. Final exam. Prereq: Engr 110. Sem hrs: 3 fall or spring.

Aero 312. Introductory Engineering Thermodynamics. 1(1)
First law and energy. Working fluids for cycles. Second law and entropy. Power cycles. Final exam. Prereq: Math 132. Sem hrs: 3 fall or spring. (Class of 1986)

Aero 312. Introductory Engineering Thermodynamics. 1(1)*
First law and energy. Working fluids for cycles. Second law and entropy. Power cycles. Elementary gas dynamics. Final exam. Prereq: Physics 211. Sem hrs: 3 fall or spring. (Class of 1987 and subsequent classes)

Aero 356. Flight Mechanics I. 1(1)
Airplane equations of motion. Takeoff and landing, steady and accelerated performance. Static and dynamic stability. Control and handling qualities. Lab. Final exam. Prereq: Aero 311. Sem hrs: 3 fall or spring.

Aero 363. Heat Transfer. 1(1)
Energy transport by conduction, convection, and radiation. Steady and unsteady heat flow. Free and forced convection. Thermal boundary layers. Black and gray body radiation. Lab. Final exam. Prereq: Aero 312. Sem hrs: 3 fall or spring. (Course changed to Aero 453, Aerothermodynamics, effective fall 1986.)

Aero 366. Propulsion I. 1(1)
Airbreathing and rocket engines. Cycle analysis and preliminary design of jet engines. Lab. Final exam. Prereq: Aero 311; Aero 312; Math 211 or Math 355. Sem hrs: 3 fall or spring.

Aero 371. Aerodynamics I. 1(2)
Kinematics and dynamics of a fluid field, thin airfoil theory and the finite wing, application of one-dimensional compressible flow. Lab. Final exam. Prereq: Aero 311; Completed or enrolled in Aero 312; Math 211 or Math 355. Sem hrs: 3 fall or spring.

Aero 372. Aerodynamics and Design. 1(2)
Aerodynamic theories and mechanical properties of shapes as applied to the determination of aerodynamic loads and design of major aircraft components (wing, fuselage, tail). Lab. Final report. Prereq: Mech 210; Completed or enrolled in Aero 371. Sem hrs: 3 fall or spring.

Aero 377. Analytical and Numerical Methods in Aeronautics. 1(1)
Partial differential equations and vector operations as applied to aeronautical engineering problems. FORTRAN programming. Application of analytical and numerical techniques. Final exam. Prereq: Comp Sci 100; Math 351 or Math 355; Completed or enrolled in Aero 371. Sem hrs: 3 fall or spring.

Aero 450. Aeronautical Laboratory. 1(2)
Selected experiments in the fields of aerodynamics, gas dynamics, propulsion, and flight mechanics. Wind tunnel used in design project. Lab. Final exam. Prereq: Aero 371; Aero 356. Sem hrs: 3 fall or spring.

Aero 453. Aerothermodynamics. 1(1)
Energy transport by free and forced convection. Momentum and thermal boundary layers. Introduction to conduction and radiation. Final exam. Prereq: Aero 371; Completed or enrolled in Aero 377 or department permission. Sem hrs: 3 fall. (Effective fall 1986.) (Class of 1987 and subsequent classes.)

Aero 457. Flight Mechanics II. 1(1)
Continuation of Aero 356. Topics in accelerated performance. Aircraft stability, control, and handling qualities analyses. Lab. Final exam. Prereq: Aero 356; completed or enrolled in Aero 377 or department permission. Sem hrs: 3 spring.

Aero 462. Propulsion II. 1(1)
Advanced studies of airbreathing engines and rocket propulsion systems. Off-design performance of turbine engines. Analysis of jet engine components. Final exam. Prereq: Aero 366. Sem hrs: 3 fall.

Aero 463. Advanced Topics in Aeronautics. 1(1)
Topics of current interest in aerodynamics, propulsion, performance, stability and control. Final exam. Prereq: Department permission. Sem hrs: 3 spring.

Aero 464. Aircraft Design. 2(2)
Fundamentals of design presented through conceptual design of an advanced aircraft involving consideration of aerodynamics, propulsive system, flight mechanics and structures. Final report. Lab. Prereq: Aero 356. Sem hrs: 6 fall or spring.

Aero 466. Propulsion Design. 2(2)
Fundamentals through preliminary design of an airbreathing propulsion system for an advanced aircraft. Determination of on- and off-design engine parameters and engine size. Preliminary component design and integration. Lab. Final report. Prereq: Aero 366. Sem hrs: 6 spring.

Aero 471. Aerodynamics II. 1(1)
One-dimensional gas dynamics and wave motion, waves in supersonic flow, small perturbation theory, slender body theory, similarity rules, introduction to viscous flows. Lab. Final exam. Prereq: Aero 371. Sem hrs: 3 fall or spring. (Classes of 1986 and earlier.)

Aero 471. Aerodynamics II. 1(1)
Two-dimensional gas dynamics. Method of characteristics. High subsonic, transonic, and supersonic airflow. Matching of viscid and inviscid solutions. Final exam. Prereq: Aero 453. Sem hrs: 3 spring. (Effective fall 1986.) (Class of 1987 and subsequent classes.)

Aero 481. Flight Test Techniques. 1(2)
Fundamental flight test methods for gathering performance and stability-and-control data for fixed wing aircraft. Theory of flight test methods studied, using fundamental and advanced principles of flight mechanics. Pitot-static calibration, instrumentation, data reduction and weight-and-balance. In-flight performance and stability-and-control data. Final exam. Prereq: Aero 356. Sem hrs: 3 fall or spring.

Aero 495. Special Topics. 1(1-2)
Selected topics in aeronautics. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Aero 499. Independent Study. 1(0)
Individual study and research supervised by a faculty member. Topic established with the department head. Final report. Sem hrs: 1 to 3 fall or spring.

AIRMANSHIP (Armnshp)

Offered by the Deputy Commandant for Operations (94th ATS)

Armnshp 101. Airmanship Introduction. 0(0)
Introduces fourthclass cadets to available Airmanship programs. Provides a T-41 orientation flight to demonstrate basic principles of flying and to motivate cadets towards development of aviation skills. No grade. Sem hrs: 0. Basic Cadet Summer.

Armnshp 441. Pilot Indoctrination Program. 1(3)
Required course for all physically qualified firstclass cadets who volunteer to attend USAF Undergraduate Pilot Training. Includes ground training, and dual and solo flight training in the T-41C aircraft. Pass/fail. Sem hrs: 3 summer, fall or spring.

Armnshp 449. Private Pilot Ground School. 0(1)
Ground school preparation for the FAA Private Pilot written examination. Pass/fail. Sem hrs: 1 fall or spring.

Armnshp 450. Airplane Rating, Private. 0(0)
Dual and solo flight training to complete the requirements for an FAA Private Pilot Certificate. Conducted at the USAFA Aero Club at the cadet's expense (some subsidy is available from the Cadet Aviation Club). Pass/fail. Sem hrs: 1 summer, fall or spring.

Armnshp 451. Glider Instruction, Dual/Solo. 0(3)
Ground school, dual and solo flight training. Required course offered during the academic day. Normally pursued during the thirdclass year. Pass/fail. Sem hrs: 2 summer, fall or spring.

Armnshp 459. Commercial Pilot Ground School. 0(1)
Ground school preparation for the FAA Commercial Pilot written exam. Prereq: Armnshp 450 or FAA Private Pilot Certificate. Pass/fail. Sem hrs: 2 fall or spring.

Armnshp 460. Airplane Rating, Commercial. 0(0)
Dual and solo flight training to complete the requirements for an FAA Commercial Pilot Certificate. Conducted at the USAFA Aero Club at the cadet's expense (some subsidy is available from the Cadet Aviation Club). Prereq: Armnshp 450 or FAA Private Pilot Certificate. Pass/fail. Sem hrs: 1 summer, fall or spring.

Armnshp 461. Glider Rating, Commercial. 0(0)
Ground school, dual and solo flight training for an FAA Commercial Pilot Glider Rating. Pass/fail. Prereq: Armnshp 451 or approval by Chief, Formal Courses, 94th ATS. Sem hrs: 2 fall.

Armnshp 469. Instrument Ground School. 0(1)
Ground school preparation for the FAA Instrument Pilot written exam. Prereq: Armnshp 450 or FAA Private Pilot Certificate. Pass/fail. Sem hrs: 2 fall or spring.

Armnshp 470. Airplane Rating, Instrument. 0(0)
Dual flight instruction to complete the requirements for an FAA Instrument Pilot Rating. Conducted at the USAFA Aero Club at the cadet's expense (some subsidy is available from the Cadet Aviation Club). Prereq: Armnshp 450 or FAA Private Pilot Certificate. Pass/fail. Sem hrs: 1 summer, fall or spring.

Armnshp 471. Glider Rating, Flight Instructor. 0(0)
Ground school and dual instruction for an FAA Flight Instructor Glider Rating. Pass/fail. Prereq: Armnshp 461 or approval by Chief, Formal Courses, 94th ATS. Sem hrs: 2 spring.

Armnshp 472. Cadet Soaring Instructor Duty. 0(0)
Selected cadets serve as instructors in Armnshp 451. Pass/fail. Prereq: Armnshp 471. Sem hrs: 2 summer, fall or spring.

Armnshp 473. Cadet Soaring Instructor Duty. 0(0)
Selected cadets serve as instructors in Armnshp 461, 471. Pass/fail. Prereq: Armnshp 471. Sem hrs: 2 fall or spring.

Armnshp 480. Airplane Rating, Flight Instructor. 0(0)
Dual flight training to complete the requirements for an FAA Flight Instructor, Airplane, Rating. Conducted at the USAFA Aero Club at the cadet's expense (some subsidy is available from the Cadet Aviation Club). Prereq: Armnshp 460 or FAA Commercial Pilot Certificate. Pass/fail. Sem hrs: 1 1/2 summer, fall or spring.

Armnshp 490. Basic Free Fall Parachuting. 0(0)
Free fall parachuting. Emergency parachuting as it pertains to Air Force careers. Successful completion entitles student to Air Force Basic Parachutist Badge. Pass/fail. Prereq: Passing score on special physical fitness test and not completed Mil Tng 452. Training conducted after school and on weekends. Sem hrs: 2 summer (C1C, C2C or C3C standing) spring (C1C, C2C, C3C or C4C standing).

Armnshp 491. Advanced Parachute Training. 0(0)
Ground and aerial training progression from initial free fall training to the basics of free falls, controlled body maneuvers, and precision landings. Practice with conventional and ram-air canopies. Introduction to instructional techniques, jumpmaster procedures and competitive parachuting. Conducted after classes and on weekends. Partially fulfills requirements toward Class B, U.S. Parachute Association License. Pass/fail. Prereq: C2C or C3C standing and Airmanship 490. Sem hrs: 1-1/2 fall.

Armnshp 492. Cadet Parachute Instructor Training. 0(0)
Trains selected cadets as instructors and jumpmasters for Armnshp 490. Instructional techniques and jumpmaster procedures. Aerial training: proficiency jumps; ground training: instruction on inspection, packing, and maintenance of conventional and advanced parachutes. Mandatory participation in spring training exercise. Conducted after classes and on weekends. Partially fulfills requirements toward Class C, U.S. Parachute Association License. Pass/fail. Prereq: C2C or C3C standing; Armnshp 491 and approval by Chief, Formal Courses, 94th ATS. Sem hrs: 2 spring.

Armnshp 496. Cadet Parachute Instructor Duty. 0(0)
Selected cadets serve as instructors and jumpmasters in Armnshp 490. Competitive parachuting events and parachute demonstrations throughout the United States. (Completion during summer offering fulfills half the requirement for Mil Tng 300 or Mil Tng 400.) Training frequently conducted after classes and on weekends. Pass/fail. Prereq: Armnshp 492 and 94th ATS permission. Sem hrs: 2 summer, fall or spring.

AREA STUDIES (Area Studies is listed under ENGLISH)

ASTRONAUTICS (Astro)

Offered by the Department of Astronautics (DFAS)

Astro 332. Introduction to Astronautics. 1(1)*
Fundamental analysis of the problems and principles of astronautics: includes problem modeling, elementary error analysis, flat earth trajectories, ballistic missile trajectories; surveys rocket propulsion, inertial navigation and guidance, reentry, the space environment and present Air Force space operations. The restricted two-body model is applied to satellites and interplanetary trajectories, methods of orbit description and determination, Hohmann transfer orbits, plane changes, satellite rendezvous, and ground traces. Final exam. Prereq: Math 211 or Math 355; completed or enrolled in Physics 211. Sem hrs: 3 fall or spring.

Astro 360. Space Vehicle Systems. 1(1)
Introduction to the support and mission systems used on space vehicles. The support systems include structures, propulsion, communication, power, and ground support. The mission systems include sensor systems, navigation, guidance and control, and environmental control. A current space vehicle will be used to show the interdependence of these systems. Final exam. Prereq: Astro 332. Sem hrs: 3 fall or spring.

Astro 450. Aerospace Dynamics, Guidance and Control. 1(1)
Introduction to the engineering application of rotational and translational equations of motion for rigid and nonrigid bodies. Various aerospace systems such as air-launched missiles, ICBMs and satellites are used to study dynamics, guidance and control problems. Final exam. Prereq: Engr 351; completed or enrolled in Astro 452. Sem hrs: 3 spring.

Astro 451. Astrodynamics. 1(1)
An intermediate course in orbit mechanics. Orbit determination, time and position in the orbit, orbit maneuvers, perturbations, rendezvous and dock-

ing. Design of structured FORTRAN computer programs to solve real-world astrodynamics problems. FORTRAN programming experience is recommended. Final exam. Prereq: Comp Sci 100; Physics 2ll; Astro 332 (Astro 332 Honors is recommended). Sem hrs: 3 fall or spring.

Astro 452. Linear Control System Analysis and Design. 1(2)
Formulation and analysis of the linear control problem by transform methods. Synthesis of linear control systems emphasizing the root locus and Bode methods. Includes laboratory analysis and synthesis with real hardware and/or analog simulation. Final project. Prereq: Engr 350 or El Engr 346. Sem hrs: 3 fall or spring.

Astro 453. Advanced Astrodynamics. 1(1)
A continuation of Astro 451. Orbit determination from noisy data, estimation theory, general and special perturbations and current topics in astrodynamics. The design of computer solutions to astronautics problems examines the trade-off between mathematical complexity (accuracy) and cost. Final exam. Prereq: Astro 451. Sem hrs: 3 fall.

Astro 454. Inertial Navigation. 1(1)
Studies of accelerometers, gyroscopes, gyrostabilized platforms, strapdown platforms, system mechanization, navigation equation development and system error analysis, and estimation including least squares and optimal filtering. Projects include calibration of accelerometers and gyroscopes, design of platform stabilization control loop, and synthesis of inertial navigation system by selection of optimal components. Final exam. Prereq: Astro 452; Engr 351. Sem hrs: 3 fall.

Astro 468. Aerospace Vehicle Systems Design. 1(1)
Design of aerospace systems and subsystems. Description and application of state-of-the-art subsystems and advanced designs. Application of tools and techniques from previous courses including computers for analysis and synthesis. Field trip and lab. Final project report. Prereq: Astro 360 or department permission. Sem hrs: 4 fall and spring.

Astro 470. Space Mission Design. 1(2)
Basic principles emphasize the Space Shuttle and other current programs. Mission objectives and constraints; feasibility studies; time-line generation; launch, on-orbit, and recovery operations; and contingency planning. Computer simulations analyze typical missions. Final project. Prereq: Astro 451; Astro 360. Sem hrs: 3 spring.

Astro 475. Digital Control Theory and Design. 1(2)
Recent theory and developments in digital control and their relation to Air Force systems. Sampled data systems, z-transform theory, discrete equivalents design, and direct digital design. Emphasizes design of digital control systems using microcomputers. Final project report. Prereq: Astro 452 or department permission. Sem hrs: 3 fall.

Astro 476. Modern Control Theory and Design. 1(2)
Advanced control techniques, including state variables, full-state feedback, estimation theory and advanced control techniques. Methods are applied to the design of control systems for aircraft and spacecraft. Final project report. Prereq: Astro 475 or department permission. Sem hrs: 3 spring.

Astro 495. Special Topics. 1(1)
Selected topics in astronautics. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Astro 499. Independent Study. 1(0)
Individual study and research supervised by a faculty member. Topic established with the department head. Final report. Sem hrs: 3 fall or spring.

AVIATION (Aviation)

Offered by the Deputy Commandant for Military Instruction (50th ATS)

Aviation 100. Introduction to Aviation Fundamentals and Space Science. 0(2xx)
Exposure to Air Force flight activities, operations, and the space environment. T-37 simulator rides, a T-43 flight mission to an operational Air Force Base, and presentations in the planetarium. Orientation to basic aerodynamics, radar navigation, flight instrumentation, avionics, and space operations. Pass/fail. No final. Sem hrs: 1 fall or spring of fourthclass year.

Aviation 280. Aviation Fundamentals. 1(2)
Preparation for a rated Air Force career. Opportunity to function as aircrew members. Basic navigation and pilotage theory; equipment; flight training introduction; exposure on selected operational Air Force units and aircraft. Four flight missions: two cross-countries and one local in the T-43, and one local in the T-4l. No final exam. Prereq: C1C, C2C or C3C standing (C2C and C3C cadets have priority); AV-100. Sem hrs: 3 fall or spring. (May not be taken in same semester with any other Aviation course. Not open to cadets who have completed AV-460 or AV-470).

Aviation 460. Studies in Aviation Fundamentals. 1(2)
Classroom, trainer, and T-43 flights. Experience in aviation environment demonstrates professional Air Force flight duties and responsibilities. Three flight missions; two locals and one cross-country. No final exam. Prereq: C1C, C2C, or C3C standing. (Restricted to cadets not physically qualified for UPT or UNT. Exceptions require 50th ATS/CC approval.) Sem hrs: 3 summer, fall or spring.

Aviation 470. Applied Aviation and Navigation Theory. 1(2)
Practical application of air navigation and aviation procedures/equipment. Classroom and trainer instruction in preparation for flight missions in the T-43 aircraft. Air navigation from basic dead reckoning through radio, radar, and celestial positioning techniques. Insight into the requirements and responsibilities of a navigator through actual experience in a flying environment on two local and one cross-country flights. No final exam. Prereq: C1C, C2C, or C3C standing; C4C standing with AV-100 and 50th ATS approval. Sem hrs: 3 fall or spring.

Aviation 471. Advanced Applied Aviation. 1(1)
Integrates airplot and alter heading procedures, fuel planning, and advanced log procedures with material from the basic aviation course. Flying, accomplished in the T-43, emphasizes the proficiency required in the navigation procedures phase of Undergraduate Navigator Training (UNT). Two cross-country flight missions. Final exam. Prereq: C1C standing; AV-470 or 50th ATS approval. Sem hrs: 3 spring. (May not be taken in same semester with any other flying course.)

Aviation 490. Avionics Concepts and Systems Development. 1(1)
Discussion of avionics and systems including inertial, Doppler, astrotrackers and radar. In-depth study of the underlying theory for these systems using the T-43 as an example of a modern, integrated navigation system. In-flight application of academics in conjunction with visits to facilities involved in the development or operation of advanced navigation systems. Required flight missions not to exceed two. Final report. Sem hrs: 3 fall or spring.

Aviation 493. Cadet Aviation Instructor Training. 0(0)
Training in navigation procedures as well as in instructor techniques. To retain rating, qualified cadet instructors must maintain required instructor proficiency in subsequent semesters. (Fulfills half the requirement for Mil Tng 300 or Mil Tng 400.) Final exam. Pass/fail. Prereq: 50th ATS approval and any one of the following: AV-280, AV-460, or AV-470. Sem hrs: 3 summer.

Aviation 495. Special Topics in Aviation Sciences. 1(1)
Selected special topics in navigation, astronomy, or aviation sciences. Final exam or final report. Prereq: 50th ATS/CC approval. Sem hours and offering time determined by 50th ATS (not more than 3 sem hrs).

Aviation 498. Cadet Aviation Instructor Duty. 0(0)
Cadets maintain proficiency acquired in AV 493. Cadets instruct in AV-100, AV-280, AV-460, and AV 470 classroom, trainer and flying programs. To retain rating, cadet must provide a minimum 40 hours of contact time with 50th ATS programs each semester. Maximum required flight missions not to exceed three. No final. Pass/fail. Prereq: Aviation 493. Sem hrs: 3 summer, fall, or spring.

Aviation 499. Independent Research and Study. 1(0)
Individual study or research in navigation, astronomy, or aviation sciences under the direction of a squadron instructor. Final exam or final report. Prereq: 50th ATS/CC approval. Offering time determined by 50th ATS. Sem hrs: 3 fall or spring.

BASIC SCIENCE (Bas Sci)

Basic Science 400H. Basic Science Honors Seminar. 1(1)
An interdisciplinary analysis of contemporary problems. Innovation, quantitative rigor, and student leadership discussions. Final report. Prereq: Firstclass Honors Degree candidate or permission of the Division Chairman. Administered by Basic Science Division. Sem Hrs: 3 fall.

BEHAVIORAL SCIENCES (Beh Sci)

Offered by the Department of Behavioral Sciences and Leadership (DFBL)

Beh Sci 110. General Psychology. 1(1)*
Presents determinants of behavior which contribute to physical, psychological, and social maturity. Applies psychological principles of learning, human development, perception, motivation, personality, mental health, and group processes to understanding human behavior, achieving personal adjustment and developing Air Force leadership. Final exam. Sem hrs: 3 fall or spring.

Beh Sci 220. Leadership in Organizations. 1/2(1x)*
Examines organizational and small group dynamics as sources of influence on the leader and the led. Includes an in-depth analysis of both the leader's role in managing human resources and as a decision maker. Topical military problems are considered in the light of contemporary leadership theories. Final exam. Prereq: Beh Sci 110; C3C standing. Sem hrs: 1 1/2 fall or spring.

Beh Sci 330. Leadership in Small Groups. 1/2(1x)*
Continuation of behavioral science applications to leadership roles. Examines the interpersonal context of leadership and supervisory behavior, emphasizing those attitudes and skills which contribute to constructive interactions with others. Communication, social influence, and the nature of group interaction. Topical military problems are considered in the light of current behavioral science knowledge. Final exam. Prereq: Beh Sci 220. Sem hrs: 1-1/2 fall or spring.

Beh Sci 331. Basic Research Design and Statistics. 1(2)
An integrated course in how to conduct behavioral science research. Uses descriptive statistics and univariate parametric and nonparametric statistics in behavioral sciences applications. Practical experience with the relevant aspects of experimental design and statistics. Lab. Final exam. Prereq: Beh Sci 110. Sem hrs: 3 fall.

Beh Sci 332. Advanced Research Design. 1(2)
Continues the integrated approach to statistics and experimental psychology. Advanced multivariate experimental designs and statistics. Includes a research project which is cadet-conducted, analyzed, and presented as a journal submission and professional oral presentation. Lab. Final project. Prereq: Beh Sci 331. Sem hrs: 3 spring.

Beh Sci 352. Social Psychology. 1(1)
Investigates interactional forces between groups and the individual in society. Examines effects of diverse social and psychological pressures such as public opinion and propaganda on the individual and groups. Emphasizes attitude formation and change, aggression, and conformity. Final exam. Prereq: Beh Sci 110. Sem hrs: 3 fall or spring.

Beh Sci 373. Human Factors Engineering: Concepts and Theory. 1(1)
Investigates the history, principles, and guidelines of human factors as they impact the design of objects, places, and environments used by people. Emphasizes understanding the capabilities and limitations of man as an integral part of man-machine systems and the translation of this knowledge into engineering principles and specifications. Final exam. Prereq: Beh Sci 110; department permission. Sem hrs: 3 fall.

Beh Sci 374. Human Factors Engineering: Applications & Evaluation. 1(2)
Addresses the incorporation of human factors in man-machine systems. Includes design projects of products, work places, and work environments. Emphasizes the systems approach to development and evaluation. Final project. Lab. Prereq: Beh Sci 373; department permission. Sem hrs: 3 spring.

Beh Sci 377. Organizational Behavior and Industrial Psychology. 1(1)
A systematic study of human behavior in the world of work. Examines power and authority; roles, status, and norms; communications, motivation, group dynamics; and conflict management. Considers selection, evaluation, appraisal, and training as aspects of personnel psychology. Explores the conditions of work, engineering psychology, and hazards of work as elements of the work place. Reviews of journal articles are required. Final exam. Sem hrs: 3 fall or spring.

Beh Sci 380. Theories of Personality. 1(1)
Examines major theories of personality including behavioral, psychoanalytic, humanistic and trait approaches. Examines theories with respect to concepts of personality development, assessment techniques, research methodologies and applications to current issues. Final exam. Sem hrs: 3 fall.

Beh Sci 385. Abnormal Psychology. 1(1)
Examines the etiology, nature and treatment of mental disorders with emphasis upon understanding the psychosocial context of maladaptive behavior. Term paper. No final exam. Sem hrs: 3 fall or spring.

Beh Sci 435. Theories of Learning. 1(2)
Critically examines principles and theories of learning including methodology and evaluation of research pertaining to learning processes. Reviews current applications of research and theories. Lab. Individual research project. No final exam. Prereq: Beh Sci 110. Sem hrs: 3 fall or spring.

Beh Sci 450. Biopsychology. 1(2)
Examines the biological and neurophysiological foundations of human and animal behavior. Emphasizes central nervous system mechanisms which mediate processes such as learning and memory, language, intelligence, sleep and arousal, reward and punishment, and human mental disorders. Special consideration given to sensation and perception and topics which impact human factors design concerns. Laboratory exercises utilize research methodologies contributing to experimental data base for biopsychology. Lab. Research paper. No final exam. Prereq: Biology 110; Beh Sci 110. Sem hrs: 3 fall or spring.

Beh Sci 464. Organizational Development. 1(2)
Presents concepts, principles, and assumptions of organizational development (OD) and planned organizational change. Details models and methods for change and gives hands-on experience with practical exercises to practice the better known approaches to OD. Emphasizes job enrichment, goal setting, team building, conflict resolution, and survey feedback. Includes exercises at the individual, team and section participation level. A review of the literature or completion of individual research project is required. No final exam. Prereq: Beh Sci 377. Sem hrs: 3 fall or spring.

Beh Sci 471. Engineering Psychology and Human Performance. 1(1)
Investigates the human operator as a processor of information. Presents a model of information processing that includes perception, memory, decision making and response execution. Focuses on topics and research in areas such as signal detection theory, pilot workload, and automation within the framework of this model. Ties research topics in engineering psychology to problems of human factors design. Research papers. Final exam. Prereq: Beh Sci 374 or department permission. Sem hrs: 3 fall.

Beh Sci 490. Counseling and Group Dynamics. 1(2)
Examines the helping process from an atheoretical perspective. Investigates the positive and negative effects of stressors on affective, cognitive and behavioral development. Emphasizes the application of effective interpersonal skills toward helping both individuals and small groups. Numerous skill development and group exercises in class. Lab. Term paper. Final exam. Prereq: Beh Sci 110, 220, and 330. Sem hrs: 3 fall or spring.

Beh Sci 495. Special Topics. 1(1)
Selected topics in the Behavioral Sciences such as cultural anthropology, sociology, and marriage and the family. Final exam or report. Prereq: Department permission. Sem hrs: 3 fall or spring.

Beh Sci 499. Independent Study. 1(0)
Independent research or practicum in a specific area of behavioral science. Conducted on a tutorial basis. Term paper. No final exam. Prereq: CIC standing; department permission. Sem hrs: 3 fall or spring.

BIOLOGY (Bio)

Offered by the Department of Biology (DFB)

Biology 110. Introduction to Biological Systems. 1/2(1)*
An introduction to the structure and function of biological systems from atoms through the biosphere. Emphasizes the interrelationships among chemistry, physics, mathematics, and engineering in forming the framework of biological laws resulting in the basic unity and extraordinary diversity of life. Discusses how recent discoveries in biology affect society and the Air Force. Final exam. Sem hrs: 1-1/2 fall or spring.

Biology 330. Basic Biological Science I. 1(2)
Addresses the integrated principles of vertebrate and invertebrate zoology. Emphasizes the anatomy, physiology, embryology, taxonomy and reproduction of the organisms in the various animal phyla and on the principles of heredity and evolution. Demonstration and student participation laboratories including dissection, microscopic analysis and a field trip. Final exam. Sem hrs: 3 fall or spring.

Biology 331. Basic Biological Science II. 1(2)
Emphasizes the principles of plant biology. Centers around a survey of the plant kingdom and plant related organisms. Special emphasis on plant morphology, physiology, bioenergenetics, and ecology. Demonstration and student participation laboratories including dissection, microscopic analysis, and field trip. Final exam. Sem hrs: 3 fall or spring.

Biology 363. Genetics. 1(2)
A comprehensive study of the inheritance patterns of individuals and populations, including the mechanisms by which these patterns are expressed and changed. Additional emphasis on current technologies including genetic engineering, their role in exploring the nature of life, and the ethical burden this has placed on society. Laboratory work stresses an understanding of classical and molecular aspects of genetics through a hands-on approach. Field trip. Final exam. Prereq: Bio 330 or department permission. Sem hrs: 3 spring.

Biology 380. Ecology. 1(1)
Fundamental interrelationships between organisms and their environments emphasizing energy flow through ecosystems, biogeochemical cycling, and population dynamics. Emphasizes how man's activities affect major world biomes. Final exam. Sem hrs: 3 fall or spring.

Biology 381. Field Ecology. 1(2)
Lecture and laboratory that address ecology and field biology. Lecture includes biotic and abiotic inputs and controls of various ecosystems. Laboratory exercises introduce survey techniques used to make field trip studies. Classroom and laboratory work emphasize environmental issues of special interest to Air Force personnel. Field trip; work on Academy grounds. Final exam. Prereq: Biology 380 or department permission. Sem hrs: 3 fall.

Biology 383. Human Anatomy. 1(2)
Lecture and laboratory studies of detailed human anatomy with special emphasis on the following organ systems: integumentary, skeletal, muscular, nervous, circulatory, digestive, respiratory, urinary, reproductive, and endocrine. Field trip. Final exam. Sem hrs: 3 fall.

Biology 420. Biokinetics. 1(1)
In-depth lecture and seminar studies of the human organism in motion in terms of anatomical, physiological, and mechanical principles. Explores the biomechanical aspects of force, leverage, and

impetus in a variety of neuromuscular skills. Voluntary field Trip. Final exam. Sem hrs: 3 spring.

Biology 431. Microbiology. 1(2)
Lecture and laboratory studies of microorganisms common to our environment. Broadly based introduction of microbial morphology, physiology, genetic mechanisms (including recombinant techniques), host-pathogen relationships, microbial control and immunology. Laboratory stresses systematic identification of microbial species. Final exam. Prereq: Biology 330 or department permission. Sem hrs: 3 spring.

Biology 445. Aerospace Physiology. 1(1)
A survey of the physiological stresses associated with the aerospace environment. Emphasizes physiological mechanisms, environmental problems, and solutions that provide crew protection in USAF aerospace operations. Divided into six blocks: The Aerospace Environment, Forces Acting on the Aviator and Astronaut, the Thermal Environment, Sensory Problems in Aerospace Operations, Human Factors in Aerospace Operations, and Special Adaptations to Space Flight. Topics include: temperature and pressure change with altitude, respiratory and circulatory physiology, hypoxia and hyperventilation, pressurization and decompression, accelerative forces, high sustained G's and weightlessness, crash dynamics and restraint systems, life support equipment and pressure suit design, escape systems, sensory physiology, and human factors. Voluntary field trip. Final exam. Prereq: Department permission. Sem hrs: 3 fall.

Biology 447. Human Physiology. 1(2)
Lecture and laboratory study of the functions of the human body. Emphasizes how the body maintains homeostasis through the interplay of control mechanisms and organ systems. Topics include reproduction, aging, biological clocks, hormones, neurobiology, and reaction to stress. Final exam. Prereq: Biology 330 or department permission. Sem hrs: 3 spring.

Biology 460. Cell and Molecular Biology. 1(1)
A study of the structure and function of the living cell. Special emphasis on cell types, biological molecules, enzymes, membrane dynamics, bioenergetics, organelles, nuclear control mechanisms, immunology, differentiation, cancer, and current investigative techniques. Final exam. Prereq: Biology 330. Completion or concurrent enrollment in Chem 233 or 230 is suggested. Sem hrs: 3 fall.

Biology 480. Research Analysis. 1(2)
A survey of experimental biology through seminars, discussions, and laboratory work. Emphasizes student participation and exploring areas of current biological importance. Students will choose and analyze research papers, present their findings, discuss the ethical implications of research, and experience the scientific processes inherent in modern biology. Final report. Prereq: Department permission. Sem hrs: 3 fall or spring.

Biology 495. Special Topics. 1(1)
Selected topics in the biological sciences. Final exam or final report. Prereq: Department permission. Sem hrs and offering times determined by department (not more than 3 sem hrs).

Biology 499. Independent Study. 1(0)
Individual research or tutorial study in the biological sciences under the direction of a faculty member. Emphasizes the use of laboratory facilities and/or the biological literature. Prereq: Department permission. Completion of Biology 330 and 331 is strongly recommended. Sem hrs: 3 fall or spring.

CHEMISTRY (Chem)

Offered by the Department of Chemistry (DFC)

Chem 111-112. General Chemistry. 1-1(2-2)*
Fundamental concepts of chemistry with additional emphasis on the application of chemical principles. Topics include chemical bonding and structure, chemical equilibrium, chemical thermodynamics, organic chemistry, gas laws, kinetics, and special topics. Laboratory experiments in chemical principles and processes. Honors sections both semesters cover fundamental concepts in greater depth with added emphasis on special topics and lab applications. Final examination both semesters. Must be taken sequentially. Class trip both semesters for Honors sections. Sem hrs: Chem 111 - 3 fall; Chem 112 - 3 spring.

Chem 222. Analytical Chemistry. 1(2)
Laboratory instruction in classical and modern analytical measurements, supplemented with lectures which emphasize laboratory principles. Final exam. Prereq: Chem 112 or Chem 112H. Sem hrs: 3 fall or spring.

Chem 230. Introductory Organic Chemistry. 1(1)
Introduction to the aspects of organic chemistry important to students in the biological sciences or related areas. Topics include: nomenclature of organic compounds; stereochemistry; reaction mechanisms; structures and reactions of organic functional groups; introduction to carbohydrates, lipids, amino acids and proteins; and nucleic acids. (This is a service course primarily designed for Biology and Basic Science majors. Chemistry majors and those cadets desiring to apply for medical school will not take this course in lieu of Chem 233-234.) Final Exam. Prereq: Chem 112 or 112H. Sem hrs: 3 fall.

Chem 233. Organic Chemistry I. 1(1)
Classification and naming of organic compounds, synthesis and reactions of organic functional groups, stereochemistry, introduction to resonance, spectroscopy, and reaction mechanisms. Final exam. Prereq: Chem 112 or Chem 112H. Concurrent enrollment in Chem 243 is recommended but is optional for nonchemistry majors. Sem hrs: 3 fall.

Chem 234. Organic Chemistry II. 1(1)
Continuation of the reactions of aliphatic and aromatic compounds and reaction mechanisms. Introduction to carbohydrates, polynuclear aromatics, heterocyclic compounds, amino acids and proteins, and multi-step syntheses. Final exam. Prereq: Chem 233. Concurrent enrollment in Chem 244 recommended, but optional except for accredited-track chemistry majors. Sem hrs: 3 spring.

Chem 243. Organic Chemistry I Lab. 1(2)
Experiments in the preparation, purification and identification of representative organic compounds. Introduction to vapor phase chromatography, infrared spectroscopy, and nuclear magnetic resonance spectroscopy as applied to the identification of organic compounds. Lab illustrates the principles involved in Chem 233. No final exam. Prereq: Completed or enrolled in Chem 233. Sem hrs: 3 fall.

Chem 244. Organic Chemistry II Lab. 1(2)
Continuation of Chem 243 and includes applications of infrared, proton magnetic resonance, mass spectra, and chromatographic analysis of organic materials prepared in the laboratory. Special project familiarizes the student with library research, independent lab work, and illustrates the chemical principles studies in Chem 233/234. No final exam. Prereq: Chem 243; completed or enrolled in Chem 234. Sem hrs: 3 spring.

Chem 335. Physical Chemistry I. 1(1)
Chemical thermodynamics and equilibria; properties of gases, liquids, and solutions; phase equilibria; electrochemistry; chemical kinetics. Final Exam. Prereq: Chem 112 or Chem 112H. Sem hrs: 3 fall.

Chem 336. Physical Chemistry II. 1(1)
Molecular quantum theory, structure and spectroscopy; statistical thermodynamics; molecular dynamics. Final exam. Prereq: Chem 335. Sem hrs: 3 spring.

Chem 345. Physical Chemistry I Lab. 1(2)
Laboratory measurement of physical properties including thermodynamics of liquids and gases; thermochemistry of reactions; phase and chemical equilibria; colligative properties. Emphasizes precision of measurement, statistical treatment of data, and graphical techniques. Prereq: Completed or enrolled in Chem 335. No final exam. Sem hrs: 3 fall.

Chem 346. Physical Chemistry II Lab. 1(2)
Laboratory experiments in chemical kinetics, atomic and molecular properties, surface and transport phenomena; spectroscopy and radiochemistry. Emphasizes use of modern instrumentation and independence in designing and carrying out experiments emphasized. Prereq: Chem 345; completed or enrolled in Chem 336. No final exam. Sem hrs: 3 spring.

Chem 381. Chemistry of the Environment. 1(1)
Discussion of the nature, chemistry and alteration of the environment. Atmospheric and water pollution, waste disposal, geochemistry, energy alternatives, and special topics of current or regional interest. Emphasis on understanding the chemical principles and reactions involved in protecting and improving our environment. Includes one-half day field trips. Final exam and report. Prereq: C1C or C2C standing. Sem hrs: 3 spring.

Chem 431. Theoretical Inorganic Chemistry. 1(1)
Theoretical approach to atomic structure, covalent bonding and molecular structure; ionic compounds; coordination chemistry to include organometallics; boron chemistry; transition metal chemistry and bio-inorganics; general survey of the periodic table. Inorganic synthesis. Final exam. Prereq: Chem 336. Sem hrs: 3 fall.

Chem 432. Systematic Inorganic Chemistry. 1(1)
Applications of Chem 431 with emphasis on a systematic study of the behavior of chemical elements and their inorganic compounds. Chemistry of transition metals, organometallics, boron, bio-inorganics, fluxional molecules, kinetics and mechanisms of inorganic reactions and special topics. Final exam. Prereq: Chem 431. Sem hrs: 3 spring.

Chem 433. Advanced Organic Chemistry. 1(1)
Structure of organic compounds including resonance, aromaticity, stereochemistry, conformation, and reactive intermediates. The relationship between structure and reactivity. Photochemistry. A discussion of reaction mechanisms and the means by which they are determined. Final exam. Prereq: Chem 234; Chem 336 or department permission. Sem hrs: 3 fall.

Chem 434. Biochemistry. 1(1)
Chemistry of the life processes including comparative biochemistry; chemical nature of biomolecules

(carbohydrates, lipids, amino acids and proteins, nucleic acids and their components); energetics and metabolic control; enzymes; mechanisms and kinetics; intermediary metabolism; metabolism of nucleic acids and nitrogen-containing compounds; biosynthesis and function of macromolecules including DNA, RNA, and proteins. Final exam. Prereq: Chem 234; Chem 336 or department permission. Sem hrs: 3 spring.

Chem 435. Advanced Physical Chemistry. 1(1)
Development of molecular quantum mechanics and its application to molecular spectroscopy and chemical reaction dynamics. Spectroscopy topics include rotational, vibrational, and electronic spectroscopy. Chemical reaction dynamics emphasizes theoretical calculations for reactions of Air Force interest using the best available theoretical chemical methods. Includes one field trip to an Air Force laboratory. Final exam. Prereq: Chem 336. Sem Hrs: 3 fall or spring.

Chem 453. Instrumental Methods of Chemical Analysis. 1(2)
Advanced theory and application of modern analytical instruments for chemical analysis. Emphasis on theory as applied in laboratory instrumentation. Topics include ultraviolet, visible, infrared absorption and emission spectroscopies; nuclear magnetic resonance and electron magnetic resonance spectroscopy; x-ray methods; radiation methods; surface spectroscopies; mass spectrometry, chromatography; thermal methods; and electrochemical techniques. Final Exam. Prereq: Chem 336. Sem hrs: 3 fall.

Chem 495. Special Topics. 1(1)
Selected topics in chemistry. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Chem 499. Independent Study. 1(0)
Individual research under the direction of a faculty member. Includes use of chemical literature. No final. Prereq: Chem 244 and 345; department permission. Sem hrs: 3 fall or spring.

CIVIL ENGINEERING (Civ Engr)

Offered by the Department of Civil Engineering (DFCE)

Civ Engr 350. Materials Design Laboratory. 1(2)
Plane surveying to include leveling, open traversing, and closed traversing. Design of highway pavements, concrete mix, and timber structural members. Laboratory testing of steel connections, timber, concrete, and soils. No final exam. Prereq: Mech 210. Sem hrs: 3 Fall.

Civ Engr 361. Fundamental Hydraulics. 1(1)
Application of the principles of incompressible fluid mechanics. Fluid properties, manometry, forces on submerged bodies, open channel flow, and conduit flow. Impulse-momentum and energy methods. Hardy-Cross method for balancing flows in distribution systems. Final exam. Prereq: Engr 110. Sem hrs: 3 spring.

Civ Engr 372. Behavior and Analysis of Structures. 1(1)
Behavior and analysis of statically determinate and indeterminate beams, frames and trusses. Displacement calculations by moment area and virtual work. Analysis of indeterminate structures by consistent displacements, slope deflection, and moment distribution. Computer analysis course project. Final exam. Prereq: Mech 210. Sem hrs: 3 fall.

Civ Engr 375. Behavior and Design of Concrete Members. 1(1)
Material properties of concrete. Behavior and ultimate strength design of reinforced concrete beams, slabs, and columns. Design flexure, shear, torsion, bond and anchorage, and deflections. Computer-aided design exercises. Design project. Final exam. Prereq: Civ Engr 372. Sem hrs: 3 spring.

Civ Engr 454. Analysis and Design for Structural Dynamics. 1(1)
Behavior of materials and structures under dynamic loads. Response of single-degree-of-freedom lumped-mass models with emphasis on numerical methods of analysis. Modeling and analysis of continuous structures as discrete systems. Design of structures for ground motions and air pressures. Final exam. Prereq: Civ Engr 375, Civ Engr 472, Math 211 or Math 355. Sem hrs: 3 spring.

Civ Engr 462. Introduction to Environmental Engineering. 1(1)
Fundamental design of physical, biological, and chemical unit operations used in the control of air and water pollution, water treatment, and solid waste disposal. Topics include solid-fluid separations, flow through beds of solids, fixed-film reactors, dispersed growth reactors, hazardous-waste disposal. Final exam. Prereq: Civ Engr 361. Sem hrs: 3 fall. (Offered spring 1985 for Class of 1985 only.)

Civ Engr 463. Wastewater Treatment Plant Design. 1(2)
Design of facilities for physical, chemical, and biological treatment of wastewater and disposal of sludge. Coverage of advanced wastewater treatment and land treatment systems. Laboratory exercises analyzing raw sewage with data being used for the design processes. Final report. Prereq: Civ Engr 462. Sem hrs: 3 spring.

Civ Engr 464. Civil Engineering Design. 1(2)
Individual or group design of civil engineering projects in the areas of structural, geotechnical, and environmental engineering. Projects may address structural steel design, reinforced concrete design, structural dynamics, soil dynamics, aerospace facilities design, environmental protection, architectural design, or air base master planning. Students are individually supervised but must formulate their own investigation techniques and conclusions. Final report. Prereq: C1C standing; engineering or science major; department permission. Sem hrs: 3 fall.

Civ Engr 472. Behavior and Design of Steel Members. 1(1)
Behavior and working stress design of structural steel beams, columns, and connections. Design for flexure, shear, deflections, tension, compression and combined loads. Design of bolted and welded steel connections. Introduction to plastic design of beams and frames. Final Exam. Prereq: Civ Engr 372. Sem hrs: 3 fall.

Civ Engr 473. Structural Design. 1(2)
Design of a multi-story steel and reinforced concrete building, including structural frame, floor and wall system, and foundation. Determination of multi-story structure design loads. Use of computer to determine internal forces. Final report. Prereq: Civ Engr 375; Civ Engr 472. Sem hrs: 3 spring.

Civ Engr 480. Construction Management and Contracting. 1(1)
Construction as an industry. Construction methods and equipment. Construction project management techniques and contracting procedures. Critical path method, cost estimating, project bidding. The professional practice of civil engineering. Final exam or final report. Sem hrs: 3 fall or spring. (First offering time is Fall 1986).

Civ Engr 481. Air Base Comprehensive Planning and Design. 1(2)
Principles of comprehensive planning, land use regulatory measures, design considerations for airport and aviation system facilities emphasizing the interface with the urban and natural environment. Topics include airspace criteria, geometric design of airfields, air installation compatible use zoning, urban development patterns, transportation planning, land use planning, project feasibility, and other comprehensive planning and design considerations. Final report. Sem hrs: 3 spring.

Civ Engr 490. Introduction to Soil Mechanics. 1(2)
Engineering properties of soils: shear strength of cohesionless and cohesive soils, consolidation and settlement, stress distribution, bearing capacity. Soils classification, lateral earth pressures on structures, principles of foundation design. Soils laboratories and reports. Final exam. Prereq: Mech 210. Sem hrs: 3 fall.

Civ Engr 491. Foundation Design. 1(1)
Effects of soil conditions and the behavior of soils on foundation types. Analysis and design of footings, piles, retaining walls, sheet piling and slope stability. Final report. Prereq: Civ Engr 490. Sem hrs: 3 spring.

Civ Engr 495. Special Topics. 1(1)
Selected topics in civil engineering. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Civ Engr 499. Independent Study. 1(0)
Individual study and research in an advanced civil engineering topic approved by the department head. Final report. Sem hrs: 3 fall or spring.

COMPUTER SCIENCE (Comp Sci)

Offered by the Department of Computer Science (DFCS)

Comp Sci 100. Introduction to Computer Science. 1(2)*
An introduction to problem solving, programming, and computers. Emphasis on development of a disciplined approach to solving problems whether or not their solution involves a computer. Structured design methodology used during development of programming skills required for use of the computer as a problem solving tool. Provides fundamental understanding of the capabilities, limitations, and organization of computers. An honors section of greater depth is offered. Final exam. Sem hrs: 3 fall or spring.

Comp Sci 340. Structured FORTRAN for the Scientist/Engineer. 1(1)
An advanced programming course using FORTRAN 77 for non-computer science majors. Emphasis on use of structured programming techniques for scientific/engineering applications. Includes discussions of problem solving techniques, FORTRAN 77 language concepts, algorithm design and analysis, and data file manipulation. Liaison officers from cadet's major area work with cadets on final project. Prereq: Comp Sci 100. Sem hrs: 3 fall or spring.

Comp Sci 351. Computer System Organization. 1(1)
Expands on basic computer logic systems. Introduces and contrasts major types of computing sys-

tem organizations. Treats instruction formats, languages, operating systems, and input/output within micro, mini, and maxi computer organizations. Final exam. Prereq: Comp Sci 100. Sem hrs: 3 fall.

Comp Sci 359. Programming Languages. 1(1)
An intensive study of programming language concepts: data abstraction, scope and binding of variables, information hiding, and program control structures. Study of good programming practices: top-down design, structured programming, and style. Develops mastery of Pascal. Introduction to FORTRAN. Applied theoretical concepts to the study of several other programming languages. Final exam. Prereq: Comp Sci 100 and department permission. Sem hrs: 3 fall or spring.

Comp Sci 362. Computer Simulation. 1(1)
Theory of system modeling and computer simulation; simulation languages; queuing theory. Includes preparation of several computer programs and a group study of a real world problem. Final report. Prereq: Math 220; Comp Sci 100. Sem hrs: 3 fall or spring.

Comp Sci 380. Algorithms and Data Structures. 1(1)
Basic concepts of data; description, representation and manipulation of data structures; basic business data processing operations using strings, lists, inverted lists, and trees; file organization; data structures in programming languages; introduction to data management systems. Study of COBOL programming language. Preparation of several computer exercises. Final project. Prereq: Comp Sci 359. Sem hrs: 3 spring.

Comp Sci 453. Systems Analysis and Design I. 1(1)
Detailed study of system life cycle emphasizing user requirement analysis and workload analysis. Studies generation of management and approval documents, budget process, site preparation, facility management, and architecture selection. Term project embodies main concepts. Final project. Prereq: Comp Sci 351, 380 and CIC standing. Sem hrs: 3 fall.

Comp Sci 454. Systems Analysis and Design. II 1(1)
Continues study of system life cycle concentrating on system design, implementation and management. Includes the design, coding and testing of a significant software system with emphasis on documentation and standards. Final project and briefing (during finals). Prereq: Comp Sci 453. Sem hrs: 3 spring.

Comp Sci 463. Data Base Management 1(1)
Basic concepts of Data Base Management and Data Base Management Systems (DBMS). Introduction to CODASYL terminology; techniques of data base design and manipulation using data definition, host interface, and self-contained inquiry languages; system analysis of current DBMS systems; computer program preparation and execution of a Data Base Management problem using a DBMS. Final project. Prereq: Comp Sci 380. Sem hrs: 3 fall.

Comp Sci 467. Computer Networks and Communication. 1(1)
Design and use of computer and terminal networks. Examines the field of communications technology through satellite communications. Organized around the study of network protocol layers. Air Force applications discussed. Final project. Prereq: Comp Sci 351, 359. Sem hrs: 3 fall or spring.

Comp Sci 473. Embedded Computer Systems. 1(1)
Examines requirements for processors, input/output, and digital to analog/analog to digital conversion in the digital control application area. Includes the study of digital sensors and devices, environmental hazards, digital filters and compensators, and process control. Includes the structure and implementation of software designed for embedded computer systems using languages from assembly through Ada. Final project. Prereq: Comp Sci 351, 359. Sem hrs: 3 fall.

Comp Sci 474. Small Computers and Computer Graphics. 1(1)
Basic concepts of small computers, especially as they apply to computer graphics. Topics include architecture concepts, assembly language programming, interrupt handling, and I/O programming. Examines interactive computer graphics including both vector and raster graphics. Topics include mathematics of geometric transformations, human engineering for interaction, graphics hardware architectures, and graphics software programming packages. Includes several computer projects. Final project. Prereq: Comp Sci 351, 380. Sem hrs: 3 spring.

Comp Sci 483. Operating Systems 1(1)
Design of supervisors for large multiprocessing systems. Topics include virtual memory, resource management and allocation, concurrent processes, protection, file systems, batch and interactive subsystems. Final project. Prereq: Comp Sci 351, 380. Sem hrs: 3 fall.

Comp Sci 484. Compiler Theory and Design. 1(1)
Translators and interpreters for high-level programming languages. Program organization, grammars, scanners, and recognizers. Design and construction of a syntax-directed compiler. Final report. Prereq: Comp Sci 351, 380. Sem hrs: 3 spring.

Comp Sci 495. Special Topics. 1(1)
Selected topics in computer science. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Comp Sci 499. Independent Study. 1(0)
Individual study and research supervised by a faculty member. Topic established with the department head. Final report. Sem hrs: 3 fall or spring.

ECONOMICS (Econ)

Offered by the Department of Economics (DFE)

Econ 221. Principles of Microeconomics. 1(1)*
Introduction to microeconomics, with focus on the market economy of the United States. Includes analysis of demand, production, cost, constrained optimization, international trade, and economic issues that bear upon national security. An honors section of greater depth is offered. Final exam. Sem hrs: 3 fall or spring.

Econ 222. Principles of Macroeconomics. 1/2(1x)*
Introduction to macroeconomics, with applications to the U.S. economy. Includes analysis of national income determination and stabilization policies. An honors section of greater depth is offered. Final exam. Sem hrs: 1 1/2 fall or spring.

Econ 333. Price Theory. 1(1)
Traditional microeconomic theory emphasizing the principles of product and factor pricing, allocation and employment of resources, and the implications of various market structures. Investigates the usefulness of price theory in decision making. Final exam. Prereq: Econ 221 and 222. Sem hrs: 3 fall.

Econ 347. Quantitative Economic Methods. 1(1)
Analysis of economic problems through statistical and mathematical methods and the use of quantitative models. Final exam. Prereq: Econ 221, Econ 222, Math 220. Sem hrs: 3 fall.

Econ 351. Comparative Economic Systems. 1(1)
An examination of the theory and operation of modern economics. Theoretical and case study analysis of capitalism, market socialism, and command socialism. Final exam or final report. Prereq: Econ 222. Sem hrs: 3 fall.

Econ 356. Macroeconomic Theory. 1(1)
Analysis of national income, employment, price level determination, monetary, and fiscal policies. Explores contemporary macroeconomic issues through the *Economic Report of the President.* Final exam. Prereq: Econ 222. Sem hrs: 3 spring.

Econ 374. Survey of International Economic Issues. 1(1)
Examination of current issues in the commercial relations among nations, including international trade, international finance, economic development, and the multinational enterprise. For cadets not majoring in either economics or management. Final exam. Prereq: Econ 222. Sem hrs: 3 fall or spring.

Econ 422. Labor Economics. 1(1)
Supply and demand of labor, labor markets, mobility, unions, and wage structure. Focuses on defense implications. Final exam. Prereq: Econ 221. Sem hrs: 3 spring.

Econ 450. International Economics. 1(1)
Economic aspects of international relations, international trade, relationships among national currencies, international monetary systems, the balance of payments, and commercial policy. Final exam. Prereq: Econ 333. Sem hrs: 3 fall.

Econ 454. Soviet and Chinese Economic Policy. 1(1)
Analysis of the economic system of the Soviet Union and the Peoples Republic of China, with emphasis on the economic goals, policy objectives, strengths, weaknesses, and future prospects of each economy. Term paper. No final exam. Prereq: Econ 221 and 222. Sem hrs: 3 spring.

Econ 465. Introduction to Econometrics. 1(1)
Application of statistical tools to economic data, concentrating on methodology, econometric model building, and statistical inference. Final exam. Prereq: Econ 222; Econ 347, Mgt 331, Math 358, or Pol Sci 349; or department permission. Sem hrs: 3 spring.

Econ 466. Forecasting and Model Building. 1(2)
Continues development of econometric techniques, with emphasis on time series forecasting procedures and on methods to make optimal use of sparse or deficient data in statistical model estimation. Final exam or final report. Prereq: Econ 465. Sem hrs: 3 fall.

Econ 473. Public Finance. 1(1)
Economics of the government sector, with emphasis on public goods, taxation, fiscal policy, and government regulation. Final exam or final report. Prereq: Econ 333 or department permission. Sem hrs: 3 fall.

Econ 475. Monetary Economics. 1(1)
Advanced treatment of money in the Keynesian and Monetarist models, with emphasis on theory, policy issues, and the operation of the Federal Reserve System. Final exam. Prereq: Econ 356 or department permission. Sem hrs: 3 spring.

Econ 478. Seminar in Defense Economics. 1(2)
An advanced course in economic analysis, applying macroeconomic and microeconomic theory to defense policy. Individual research required. Final exam or final report. Prereq: Econ 333, C1C standing or department permission. Sem hrs: 3 spring.

Econ 495. Special Topics. 1(2)
Selected topics in economics of either an advanced treatment or general interest orientation. Final exam or final report. Sem hrs: 3 fall or spring.

Econ 499. Independent Study. 1(0)
Tutorial investigation of a specific area of economics. Final report. Sem hrs: 3 fall or spring.

ELECTRICAL ENGINEERING (El Engr)

Offered by the Department of Electrical Engineering (DFEE)

El Engr 210. Digital Signals and Systems. 1(1)*
An introduction to the principles of logic design. Includes Boolean algebra, combinational and sequential logic networks with basic design and analysis techniques, and an introduction to digital processing systems. Laboratory projects include the analysis and design of combinational and sequential networks and the analysis of integrated circuits as applied to digital computer architecture. Lab. Final exam. Prereq: Math 132. Sem hrs: 3 fall or spring.

El Engr 310. Signals and Systems. 1(1)*
An introduction to signal analysis and system design. Treats traditional topics such as circuit parameters, electronic functions, signal analysis, and system design. Includes time and frequency domain analysis. Emphasizes continuous as opposed to digital electronic system design. Concepts applied to the study of Air Force electronic systems and weapons technology. Laboratory projects include work with integrated circuits. Lab. Final exam. Prereq: El Engr 210; Physics 211. Sem hrs: 3 fall or spring.

El Engr 340. Circuits and Systems I. 1(2)
An introduction to electrical circuit analysis. Basic definitions of voltage, current, power and energy are introduced along with circuit components, connection equations, and device relationships. Studies circuit analysis with these fundamental ideas using both time-domain and frequency-domain (Laplace transform and sinusoidal-steady state) techniques. Extends the Laplace transform to include transform functions used to analyze simple systems such as active operational amplifier filters. Final exam. Prereq: Completed or enrolled in El Engr 210 and either Math 211 or Math 355. Sem hrs: 3 fall or spring.

El Engr 341. Electronics I. 1(1)
Introduction to semiconductor electronics. Includes analysis of semiconductor devices such as the diode and transistor. Applications of devices in electronic circuits with emphasis on the diode and transistor. Final exam. Prereq: El Engr 340 or department permission. Sem hrs: 3 fall or spring.

El Engr 344. Circuits and Systems II. 1(2)
A continuation of electrical circuit analysis from a system design perspective. Laplace transforms for S-domain analysis and design of system transfer functions. Applied dynamic system characteristics such as feedback, breakpoints, and stability to the design of analog filters and oscillators. Final exam. Prereq: El Engr 340; completed or enrolled in Math 330. Sem hrs: 3 fall or spring.

El Engr 346. Linear Systems Analysis. 1(1)
Classification of signals and systems. Signal representation by singularity functions, Fourier series, and spectra; system representation by graph topology. System analysis using convolution and state variable analysis. Introduction to the mathematical basis of discrete signal processing through Z and discrete Fourier transforms and of communication theory through modulation and detection. Final exam. Prereq: El Engr 344. Sem hrs: 3 fall or spring.

El Engr 350. Laboratory Techniques I. 0(1)
An introduction to basic electronic test equipment and laboratory techniques. Emphasizes measurement of device characteristics and circuit variables to verify fundamental theoretical laws and description of circuit response. Lab. No final exam. Prereq: Enrolled in or completed El Engr 340. Sem hrs: 1 fall or spring.

El Engr 351. Laboratory Techniques II. 0(1)
Practical application of laboratory skills with advanced test equipment. Introduction to design of fundamental electronic circuits. Emphasizes design of circuits using diodes and transistors as active circuit elements. Lab. No final exam. Prereq: El Engr 350 and enrolled in or completed El Engr 341. Sem hrs: 1 fall or spring.

El Engr 352. Laboratory Techniques. 1(1)
Application of integrated circuits and discrete components in electronic subsystems. Design and analysis of circuits with emphasis on design approach, construction, measurement, evaluation, and reporting of results. Lab. No final exam. Prereq: El Engr 351. Sem hrs: 1 fall or spring.

El Engr 360. Instrumentation Systems. 1(1)
Principles and design of modern data acquisition and instrumentation systems for nonelectrical engineering majors. Includes measurement techniques, transducers, analog and digital data processing systems and displays. Lab. Final exam. Prereq: El Engr 310 or El Engr 340. Sem hrs: 3 fall or spring.

El Engr 380. Modern Logic Design. 1(2)
An intermediate course in the design of digital systems. Topics include a survey of modern logic families (DTL, RTL, TTL, CMOS), medium scale combinational and sequential circuits, state controllers, microprogramming, and central processor unit design. Lab. Final exam. Prereq: El Engr 210; El Engr 310 or El Engr 340. Sem hrs: 3 fall or spring. (Class of 1986 and earlier.)

El Engr 388. Digital Systems Design. 1(2)
An advanced course in the design of digital systems. Topics include a survey of modern logic families (TTL, ECL, CMOS), medium-scale combinational and sequential circuits, structured system design, microprocessor instruction sets, support software, and hardware-software relationships and techniques. Lab. Final exam. Prereq: Comp Sci 100; El Engr 210; El Engr 310 or 340. Sem hrs: 3 fall or spring. (Replaces El Engr 380 for Class of 1987 & subsequent classes).

El Engr 443. Electromagnetics. 1(2)
Maxwell's Equations, plane waves, transmission, and radiating systems. Topics include wave propagation, transmission lines, waveguides, and antennas. Lab. Final exam. Prereq: Physics 311; Math 330 or department permission. Sem hrs: 3 fall or spring.

El Engr 447. Communications Systems. 1(1)
An introduction to modern electrical communications and information transfer from a systems design viewpoint. Analyzes comparative performance of various modulation and detection methods. Coverage includes theory of operation, effects of random noise, bandwidth and other design constraints, and multiplex capabilities of analog transmission systems. Lab. Final exam. Prereq: El Engr 344 and Math 330 or department permission. Sem hrs: 3 fall or spring.

El Engr 448. Digital and Data Communications. 1(1)
An introduction to the analysis and design of digital and data communication systems. Emphasizes analyzing the performance of digital communications systems in the presence of noise and design methods to improve the performance. Introduces and analyzes data communication protocols. Lab. Final exam. Prereq: El Engr 346; Math 357. Sem hrs: 3 fall or spring.

El Engr 449. Optical Communication System Design. 1(1)
An introduction to optical communication system design. Analysis of basic components of optical communication systems to include sources, channels, receivers, and modulation techniques. Final project uses these components to design and construct an optical communication system. Lab. Final project. Prereq: El Engr 447. Sem hrs: 3 spring.

El Engr 464. Design Project. 1(1)
Integrates advanced concepts in electronics, instrumentation, signal processing, communications, control theory, and microcomputer hardware with production and management methods developed in Engr 430. Design project emphasizes Air Force applications and requires cadets to design, build, and test the project, and present a report on their work. Lab. Project. Final report. Final oral exam. Prereq: Department permission. Sem hrs: 3 spring.

El Engr 471. Electronics II. 1(1)
A continuation of El Engr 341. Covers the theory and application of semiconductor devices and integrated circuits with emphasis on principles of operation and the design of circuits and systems. Topics include operational amplifiers, power amplifiers, high frequency amplifiers, digital integrated circuits, and applications. Lab. Final Exam. Prereq: El Engr 341 and El Engr 344. Sem hrs: 3 fall or spring.

El Engr 477. Introduction to Statistical Signal Processing. 1(1)
An introduction to the analysis and design of basic signal recovery techniques. Topics include signal detection, estimation of parameters, the Wiener Filter and the Kalman Filter. Emphasizes applying these signal processing techniques to modern communication, instrumentation, control, radar, and integrated navigation systems. Lab. Final exam. Prereq: El Engr 346 and Math 357. Sem hrs: 3 fall.

El Engr 481. Electronic Instrumentation Systems. 1(1)
An introduction to the analysis and design of the data acquisition and signal processing components of a modern instrumentation system. Topics include transducers, signal filtering, noise reduction, interfacing, and automated data acquisition systems. Emphasizes applying these topics to weapon system test instrumentation, telemetry, robotics, and system design concepts. Lab. Final exam. Prereq: El Engr 471. Sem hrs: 3 fall or spring.

El Engr 487. Real-Time Computation for Embedded Computers. 1(1)

An introduction to real-time software design using a microprocessor-based data acquisition and control system. Topics include structured system design, microprocessor instruction sets, support software, and hardware-software relationships and techniques. Lab. Final design project. Prereq: El Engr 210 and department permission. Sem hrs: 3 fall. (Last offering as El Engr 487 in Fall '85.)

El Engr 488. Microprocessor Systems Design. 1(2)

Analysis and design of dedicated microprocessor systems. Includes interfacing, computer architecture, design methodology and related laboratory techniques. Lab. Final Exam. Prereq: El Engr 380; El Engr 487. Sem hrs: 3 spring. (Class of 1986).

El Engr 488. Microprocessor Systems Design. 1(2)

Analysis and design of dedicated microprocessor systems. Includes Large Scale Integration (LSI) interfacing, computer architecture, hardware-software relationships, design methodology and related laboratory techniques. Lab. Course project. Final exam. Prereq: El Engr 388. Sem hrs: 3 fall or spring. (Class of 1987 and subsequent classes. Effective: Fall 1986.)

El Engr 489. Computer Engineering. 1(1)

Fundamentals of computer engineering. Topics include microprogramming, computer arithmetic, high performance architectures, parallel processing, and distributed processes. Lab. Final exam. Prereq: Math 2ll or Math 355; El Engr 388; Completed or enrolled in El Engr 488. Sem hrs: 3 spring. (Replaces El Erfgr 487 for Class of 1987 and subsequent classes. Effective: Spring 1987.)

El Engr 495. Special Topics. 1(1)

Selected topics in electrical engineering. Final project. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

El Engr 499. Independent Study. 1(0)

Individual study and research in an engineering design topic approved by the department head. Final paper and oral report. Prereq: Department permission. Sem hrs: 1 to 3 fall or spring.

ENGINEERING (Engr)

Offered by various departments within the Engineering Divisions.

Engr 110. Engineering Fundamentals. 1(2)*

Scalar approach to two-dimensional statics and dynamics to include the topics of equilibrium, stress and strain, trusses, bending, kinematics, Newton's second law, work-kinetic energy, and impulse-momentum with emphasis on the solution technique of problems encountered in the engineering sciences. Final exam or final design project. Prereq: Completed or enrolled in Math 132. (Administered by the Department of Civil Engineering.) Sem hrs: 3 fall or spring.

Engr 350. Linear Systems Analysis and Design. 1(2)

Analysis and design of linear systems. Includes modeling of electrical and mechanical systems; characterization of physical systems using linear, constant-coefficient differential equations; Laplace Transform techniques; identification of system response using frequency response and Bode plots; specification of design criteria in the s-domain; and modification of system parameters to satisfy design requirements. Analog computer programming. Uses analog computer for analysis and design. Lab. Final project. Prereq: Physics 211, completed or enrolled in El Engr 310 or El Engr 340. (Administered by the Department of Astronautics.) Sem hrs: 3 fall or spring.

Engr 351. Aerospace Engineering Techniques. 1(1)

Dynamics problem solving using computer and mathematical techniques required in aerospace engineering. Uses tutorial and self-paced study to teach FORTRAN. Translating and rotating coordinate systems, kinematics, and kinetics. Final exam. Prereq: Math 211 or Math 355; Comp Sci 100. (Administered by the Department of Astronautics.) Sem hrs: 3 fall or spring.

Engr 400H. Divisional Honors Seminar. 1(1)

An interdisciplinary study of engineering concepts, with emphasis on applications of fundamental principles. Includes case study, research, preparation and presentation of at least one major paper. Term paper or final project. Prereq: Firstclass Honors Degree candidate or permission of the Division Chairman. (Administered by a selected engineering department.) Sem hrs: 3 spring.

Engr 402. Professional Engineering Development. 0(1)

Review of mathematics, chemistry, physics, and engineering science in preparation for the national Engineer-in-Training exam. Fee required for exam. Prereq: C1C standing; ABET-accredited major. Satisfactory progress is required for continued enrollment. (Administered by Department of Civil Engineering). Sem hrs: 0 spring.

Engr 430. Engineering Systems Design. 1(1)

Application of the various engineering disciplines to overall systems analysis and design. Includes introduction and application of the Air Force systems acquisition process in completing a design project. Design projects include attention to economic and management aspects of the systems design process. Prereq: Aero 311; Aero 312; Comp Sci 100; El Engr 310/340; Mech 210; Astro 332, if possible. (Administered by the Department of Astronautics with instructors from all Engineering Departments.) Final report and briefing. Sem hrs: 3 fall and spring.

ENGLISH (English)

Offered by the Department of English (DFENG)

English 110. Basic Composition. 1(2)

Review of writing fundamentals. Emphasizes grammar and composition. Frequent writing assignments culminate in a research paper. Successful completion satisfies the requirement for English 111. No final exam. Sem hrs: 3 fall.

English 111. Composition. 1(1)*

Emphasizes the fundamentals of composition. Frequent writing assignments culminate in a research paper. No final exam. Sem hrs: 3 fall or spring.

English 212. Persuasive Composition and Speech. 1(1)*

Develops fundamentals skills in speech and intermediate skills in writing. Emphasizes audience analysis, research techniques, and persuasion. Frequent writing and speaking assignments culminate in a research project. No final exam. Prereq: English 111. Sem hrs: 3 fall or spring.

English 330. Technical Composition and Speech. 1(1)*

Polishes writing and speaking skills so students with Engineering or Basic Sciences majors will communicate clearly, correctly, and persuasively as Air Force officers. Frequent writing and speaking assignments culminate in a professional technical report and a formal briefing. The report and briefing involve thorough investigation of a topic related to the student's academic major. No final exam. Prereq: English 212; C2C standing. For students with majors from the Divisions of Engineering or Basic Sciences. Sem hrs: 3 fall or spring.

English 350. Advanced Composition and Speech. 1(1)*

Polishes writing and speaking skills so students with Humanities or Social Sciences majors will communicate clearly, correctly, and persuasively as Air Force officers. Frequent writing and speaking assignments culminate in a professional report and a formal briefing. The report and briefing involve thorough investigation of a topic related to the student's academic major. No final exam. Prereq: English 212; C2C standing. For students with majors from the Divisions of Humanities or Social Sciences. Sem hrs: 3 fall or spring.

English 353. Shakespeare. 1(1)

Intensive study of Shakespeare's poetry and major plays within the cultural and historical perspectives of Renaissance England. Cadets attend a stage production of one play when available. Designed for nonhumanities majors as well. Final exam. Prereq: English 111. Sem hrs: 3 spring.

English 360. Classical Masterpieces: Homer to Milton. 1(1)

Introduction to the great myths underlying our notion of the heroic and the romantic. Epics and romances from the beginnings of European literature to the seventeenth century, including such works as the *Iliad*, *Oedepus Tyrannus*, *Aeneid*, *Quest of the Holy Grail*, *The Divine Comedy*, and *Paradise Lost*. Examines imitations of epic themes and motifs over the centuries, how one poet has influenced those who followed him. Final exam. Prereq: English 111. Sem hrs: 3 fall.

English 370. Advanced Speech. 1(2)

Instruction and practice in public address, including informative, argumentative, and persuasive speaking. Emphasizes a workshop approach with individual coaching; frequent audio and video taping sessions. Open to all cadets. No final exam. Prereq: English 212. Sem hrs: 3 fall.

English 373. The Novel Today. 1(1)

A survey of twentieth-century novels by such authors as Faulkner, Hemingway, Vonnegut, Joyce, Woolf, Graham Greene, Fowles, and Solzhenitsyn. Examines structure and social content to discover how the novel has developed into the dominant literary form of the twentieth century. Final exam. Prereq: English 111. Sem hrs: 3 fall.

English 406. Masterpieces of World Literature. 1(1)*

Examines great works of literature by the world's greatest writers, works that have shaped our culture and are part of every educated person's experience. Concentrates on such vital concerns as leadership, integrity, technology, human relationships, and moral values through such works as Homer's *Odyssey*, Chaucer's *The Canterbury Tales*, Shakespeare's *Hamlet*, Voltaire's *Candide*, and contemporary classics. Frequent writing and speaking assignments continue the core English program's emphasis on skilled communication. At the discretion of the department head, some cadets with previous literature classes may be allowed to fulfill this core requirement by taking either Fine Art 451 or Fine Art 458. Final exam. Prereq: English 212. Sem hrs: 3 fall or spring.

English 460. Major British Authors. 1(1)
A survey of the best prose, poetry, and drama of the British Isles, from the *Beowulf* poet and Chaucer to George Bernard Shaw, James Joyce, and John Fowles. Emphasizes the continuity of the English literary tradition, as well as the lasting excellence of its classic works. Final exam. Prereq: English 111. Sem hrs: 3 spring.

English 471. American Literature I: Beginnings to Naturalism. 1(1)
A survey of American fiction, poetry, drama, and prose by such authors as Jefferson, Irving, Poe, Hawthorne, Melville, Whitman, Twain, and Dickinson. Final exam. Prereq: English 111. Sem hrs: 3 fall.

English 472. American Literature II: Naturalism to the Present. 1(1)
A continuation of the survey of American fiction, poetry, drama, and prose by such writers as Robinson, Eliot, Frost, O'Neill, Fitzgerald, Faulkner, Hemingway, Wright, and selected contemporary authors. Final exam. Prereq: English 111 (English 471 recommended). Sem hrs: 3 spring.

English 475. Creative Writing. 1(1)
Poetry or short fiction. Workshop with students' work the center of discussion and attention. Final project: Students to present their own best work. Prereq: English 111. Sem hrs: 3 spring.

English 484. Literature of War. 1(1)
Approaches issues raised by war and military life through selected readings on war from Homer and the Bible to the present. Typical central topics include The Soldier as Hero or Anti-hero, Types of Leadership, or the Literature of Flight. Final exam. Prereq: English 111. Sem hrs: 3 spring.

English 495. Special Topics. 1(1)
Selected topics in English. Previous topics have included Black Literature, Detective Fiction, Literature of the Supernatural, Science Fiction, The Play's the Thing, and Tolkien and the Roots of Fantasy. No final exam. Prereq: English 111. Sem hrs: 3 fall or spring.

English 499. Independent Study. 1(0)
Study and research in literature, composition, or creative writing for students who have demonstrated their ability for advanced study in regularly offered enrichment courses and for whom an appropriate enrichment course does not exist. Topics and meetings arranged with the instructor. Final report. Prereq: Department permission. Sem hrs: 3 fall or spring.

Area Stu 351. The American Identity. 1(1)
Interdisciplinary course. Considers the origins, development, and nature of the American experience. Unifying topics may include the American Dream or American Regionalism. Readings, reports, and projects incorporate the views and methodology of literature, law, philosophy, history, folklore, music, art, geography, political science, economics, and social science. Seminar approach. Final exam. Prereq: English 111. Sem hrs: 3 fall.

FINE ARTS (Fine Art)

Offered by the Department of Philosophy and Fine Arts (DFPFA)

Fine Art 451. Introduction to the Visual Arts. 1(1)
A discussion and analysis of art concepts, artists and styles. Emphasis on developing individual potential for aesthetic and creative experiences. Includes a brief survey of the evolution of art, the philosophy of art, an examination of various media, and studio projects in painting and sculpture. Artistic ability or prior knowledge of art not required. Voluntary field trip to the Denver Art Museum. May fulfill English 406 core requirement with permission of the English Department Head. Final exam. Sem hrs: 3 fall or spring.

Fine Art 458. Music Appreciation. 1(1)
Survey of music of the Western world and a study of basic elements, forms, and styles in representative works by major composers. Emphasis on listening, understanding, and appreciation. Voluntary field trip to an area concert. Knowledge or talent in music not required. May fulfill English 406 core requirement with the permission of the English Department Head. Final exam. Sem hrs: 3 fall or spring.

Fine Art 460. Fine Arts Studio. 1(2)
Explores design, printing, painting and sculpture. Projects in graphics, drawing, woodcut and etching, followed by acrylics, oils, synthetics, wood, stone, or bronze. Prior experience not required. Emphasis on student creativity and responsibility. No final. Prereq: Fine Art 451, Fine Art 477, or department permission. Sem hrs: 3 spring.

Fine Art 477. American Art and Music. 1(1)
An historical survey which considers American aspects of music and art, with reference to visual and aural communication, regional and national means of expression, and the influence of American currents of thought on specific periods and individual styles, including contemporary artists and composers. Knowledge or ability in music or art not required. Voluntary field trip to area concert or museum. Final exam. Sem hrs: 3 fall.

Fine Art 495. Special Topics. 1(1)
Selected special topics in Fine Arts. Final exam or final report. Sem hrs: 3 fall or spring.

Fine Art 499. Independent Study. 1(0)
Independent study in art or music. Subject and meetings arranged with the instructor. No final. Prereq: For visual art, Fine Art 451 and Fine Art 460 plus department permission; for music, Fine Art 458 and department permission. Sem hrs: 3 fall or spring.

FOREIGN LANGUAGES (For Lang)

Offered by the Department of Foreign Languages (DFF)

For Lang 131-132. 1-1/2 (2-1) or 1/2-1 (1-2) (See supplemental information)

Arabic 131-132	**Basic Arabic**	**1-1/2 (2-1)**
Chinese 131-132	**Basic Chinese**	**1-1/2 (2-1)**
French 131-132	**Basic French**	**1/2-1 (1-2)**
German 131-132	**Basic German**	**1/2-1 (1-2)**
Japanese 131-132	**Basic Japanese**	**1-1/2 (2-1)**
Russian 131-132	**Basic Russian**	**1-1/2 (2-1)**
Spanish 131-132	**Basic Spanish**	**1/2-1 (1-2)**

Basic foreign language study with emphasis on communicative skills, drills in grammar and structure. Introduction of aural/reading comprehension and contemporary culture and civilization of language studied. Students are placed in course on basis of placement examination scores. Final exam both semesters. Must be taken sequentially. Sem hrs: For Lang 131 - 3 or 1-1/2 fall; For Lang 132 - 1-1/2 or 3 spring. (See supplemental information for additional details.)

For Lang 141-142. 1-1/2 (2-1)*

French 141-142	**Accelerated Basic French**
German 141-142	**Accelerated Basic German**
Spanish 141-142	**Accelerated Basic Spanish**

Accelerated basic foreign language study with emphasis on communicative skills. Drills in grammar and structure. Introduction of aural/reading comprehension and contemporary culture and civilization of language studied. Students are placed in course on basis of placement examination scores. Final exam both semesters. Must be taken sequentially. Sem hrs: For Lang 141 - 3 fall; For Lang 142 - 1-1/2 spring. (See supplemental information for additional details.)

For Lang 150. 1(2)

French 150
German 150
Spanish 150

Emphasizes communicative skills and development of aural/reading comprehension. Introduction to contemporary culture and civilization of language studied. Students are placed into course on basis of placement examination scores. Fall semester only. Final exam. Sem hrs: 3, with 1-1/2 semester hours automatic validation credit for For Lang 155 upon completion of For Lang 150.

For Lang 155. 1(0)

French 155
German 155
Spanish 155

Emphasizes communicative skills and development of aural/reading comprehension. Introduction to contemporary culture and civilization of language studied. Students who complete For Lang 150 successfully will receive automatic validation credit for For Lang 155. Sem hrs: 1 1/2 hours validation. (Class of 1987 and subsequent classes.)

For Lang 221. 1(1)

Arabic 221	**Intermediate Arabic I**
Chinese 221	**Intermediate Chinese I**
French 221	**Intermediate French I**
German 221	**Intermediate German I**
Japanese 221	**Intermediate Japanese I**
Russian 221	**Intermediate Russian I**
Spanish 221	**Intermediate Spanish I**

Review of grammar and structure of target language with emphasis on grammatical and syntactical accuracy in both speech and writing. Intensification of aural and reading comprehension. Student presentations and classroom discussions based on selected readings in culture and civilization of language studied. Language laboratory supplements classroom instruction. Final exam. Prereq: Successful completion of For Lang 132 or 142 or 150, or department permission. Sem hrs: 3 fall. (French, German, and Spanish 221 will be offered both fall and spring semesters.)

For Lang 222. 1(1)

Arabic 222	**Intermediate Arabic II**
Chinese 222	**Intermediate Chinese II**
French 222	**Intermediate French II**
German 222	**Intermediate German II**
Japanese 222	**Intermediate Japanese II**
Russian 222	**Intermediate Russian II**
Spanish 222	**Intermediate Spanish II**

Continuation of essential elements of language structure. Emphasis on conversational practice and aural comprehension of contemporary spoken language. Student presentations and classroom discussions based on culture and civilization readings/topics in target language. Language laboratory supplements classroom instruction. Final exam. Prereq: Successful completion of For Lang 221 or department permission. Sem hrs: 3 spring. (French, German, and Spanish 222 will be offered both fall and spring semesters.)

For Lang 223. 1(1)

Arabic 223	**Intermediate Arabic III**
Chinese 223	**Intermediate Chinese III**
French 223	**Intermediate French III**
German 223	**Intermediate German III**
Japanese 223	**Intermediate Japanese III**
Russian 223	**Intermediate Russian III**
Spanish 223	**Intermediate Spanish III**

Continuation of essential elements of language structure. Continued emphasis on conversational practice and aural comprehension of contemporary spoken language, with increased attention to reading and writing. Develops the four basic language skills of speaking, listening, reading, and writing, in that order. Final exam. Prereq: Successful completion of Foreign Language 222 or department permission. Sem hrs: 3 fall. (French, German, and Spanish 223 will be offered both fall and spring.)

For Lang 365. 1(1)

Arabic 365	**Advanced Arabic**
Chinese 365	**Advanced Chinese**
French 365	**Advanced French**
German 365	**Advanced German**
Japanese 365	**Advanced Japanese**
Russian 365	**Advanced Russian**
Spanish 365	**Advanced Spanish**

Oral discussion of civilization, culture, and contemporary issues (military, political, economic) of the country or countries concerned. Discussion in the target language, based on selected readings in that language. Final exam. Prereq: Successful completion of Foreign Language 223 or department permission. Sem hrs: 3 spring. (French, German, and Spanish 365 will be offered both fall and spring.)

For Lang 376. 1(1)

Arabic 376	**Contemporary Literature**
Chinese 376	**Contemporary Literature**
French 376	**Contemporary Literature**
German 376	**Contemporary Literature**
Japanese 376	**Contemporary Literature**
Russian 376	**Contemporary Literature**
Spanish 376	**Contemporary Literature**

Study of important writers, their works, and influences on their societies. Final exam. Prereq: For Lang 365 or department permission. Sem hrs: 3 fall or spring.

For Lang 491. 1(1)

French 491. French AFA Preparation I.
Intensive program in French for prospective candidates for the French Air Force Academy Exchange Program. Provides required fluency in advanced conversation and reading/translation (with special emphasis on scientific texts). Final exam. Prereq: French 223 or department permission. Sem hrs: 3 spring.

For Lang 492. 3(0)

French 492. French AFA Preparation II.
Continuation of French 491. Intensive program stressing everyday conversation and scientific vocabulary. Includes advanced composition, translations and development of note-taking skills in the language. Final exam. Prereq: French 491 and nomination by the Dean of the Faculty for participation in the French Air Force Academy Exchange Program. Sem hrs: 8 summer only.

For Lang 495. Special Topics. 0-2(1)
Selected topics in foreign languages. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department.

For Lang 499. Independent Study. 1(0)
Individual study or research conducted on a tutorial basis. Study may be in any of the seven languages offered by the department. Topic or area of study/research must be approved by the department head. Final exam and/or term paper. Sem hrs: 3 fall or spring.

Supplemental Information.
All cadets who have a background in one of the foreign languages offered at the Academy will be administered a placement examination upon arrival at the Academy. Based on the results of that examination, a cadet may:

1. Receive validation credit for the core language requirement (4 1/2 sem hrs) or

2. Be placed into the Basic Course sequences (For Lang 131 or 141) and required to take 4 1/2 sem hrs of foreign language study or

3. Be placed into For Lang 150 for 1 semester (3 sem hrs credit) and given validation credit (1-1/2 sem hrs) with For Lang 155. Cadets without prior language background will be placed into For Lang 131 (Elementary Basic Sequence) of the language of their choice. Cadets with one or two years of previous study of the language will normally be placed into For Lang 141 (Accelerated Basic Sequence); those with two or more years will be placed into For Lang 150.

GEOGRAPHY (Geog)

Offered by the Office of Instruction for Geography (DFSOG)

Geog 320. Principles of Geography. 1(1)
Geographic analysis of major world regions applying principles of physical and cultural geography. Comparison of regional associations evolving from the synthesis of man's natural and cultural environment. Final exam. Sem hrs: 3 fall or spring.

Geog 340. Cartography. 1(2)
An introduction to concepts and methods of cartography. Includes reference systems, map projections, grids, map compilation, computer, and statistical maps. Lab required. Final exam or final project. Sem hrs: 3 fall.

Geog 342. Analytical Techniques in Geography. 1(1)
Examines techniques in spatial analysis to include quantitative and cartographic methods. Specific problems representative of various subfields of geography are analyzed. Preparation of a research proposal using the "Scientific Method". Final exam. Prereq: Geography major or department permission. Sem hrs: 3 spring.

Geog 352. Climatology. 1(1)
An analysis of the parameters governing the distribution of and the dynamic processes that control the earth's regional climates. Focuses on applied climatology. Final exam. Sem hrs: 3 fall.

Geog 353. Geomorphology. 1(1)
An analysis of the dynamic processes, distribution and structure of the earth's physical features. Focuses on fundamental concepts of physical geology, climate, soils, and vegetation. Includes local field trips within Rocky Mountain region. Final exam. Sem hrs: 3 spring.

Geog 370. Political Geography. 1(1)
Analysis of the spatial structure and processes of political systems at various levels of government. Examines geographic problems and processes of politically organized space including nationalism, development, and acquisition of natural resources. Final exam. Sem hrs: 3 spring.

Geog 372. Economic Geography. 1(1)
Examines the physical, political, and demographic environments as they relate to the location of economic activity. Emphasizes contemporary industrial and commercial development theory. Final exam. Sem hrs: 3 fall.

Geog 382. Geographic Application of Imagery Analysis. 1(2)
Principles and employment of remote sensing systems using the visible and nonvisible portions of the electromagnetic spectrum; rectification of imagery for detailed landform analysis; application of imagery to cultural and physical geography. Case studies and class projects focus on direct application of empirical data. Lab required. Final exam or project. Sem hrs: 3 spring.

Geog 471. Western Europe and the Mediterranean. 1(1)
Geographical analysis of the physical and cultural aspects of Western Europe and the Mediterranean. Emphasis on the urban character of Europe and the region's interrelationships. Discussion of European political, economic, and cultural ties. Final exam. Sem hrs: 3 fall.

Geog 472. USSR and Eastern Europe. 1(1)
Geographic analysis of the physical, cultural and economic base of the Soviet Union and Eastern Europe. Topical analyses include assessment of the environmental base, nature and extent of resource utilization, and spatial interaction. Final exam. Sem hrs: 3 spring.

Geog 475. Geography of the Developing World/ East Asia and Latin America. 1(1)
Geographic analysis of the physical and cultural landscapes of selected regions of the developing world. Investigates the regional distribution of resources, economic structure, industrial strength, and settlement patterns. Focuses on problems of population growth, cultural divergence, social and political instabilities. Latin America in odd-numbered years and Far East in even-numbered years. Final exam. Sem hrs: 3 fall.

Geog 491. Seminar on Basis of Geographic Thought and Research. 1(1)
Examines the development of geographic thought. Investigates changes in research tools and techniques over time. Includes an extensive exposure to the "scientific method". Substantive, empirical research report. Field research or its equivalent required. Final exam. Prereq: Department permission. Sem hrs: 3 fall.

Geog 495. Special Topics. 1(1)
Selected topics in geography. Final exam or final report. Semester hours and offering time determined by department (not more than 3 sem hrs).

Geog 499. Independent Study. 1(0)
Independent research and study in specific area of geography conducted on a tutorial basis. Research paper or final project. Prereq: Department permission. Sem hrs: 3 fall or spring.

HISTORY (History)

Offered by the Department of History (DFH)

History 101. Modern World History. 1(1)*
Surveys major premodern civilizations and examines the development and diffusion of modern culture throughout the world in the nineteenth and twentieth centuries. Emphasizes the interaction of traditional and modern cultures. Final exam. Sem hrs: 3 fall or spring.

History 202. Modern Warfare and Society. 1(1)*
Survey of the complex relationship between warfare and society from the American and French revolutions through the Arab-Israeli wars. The role of the military leader, the impact of technology, the evolution of military doctrine, and the development of air warfare are related to the changing character of warfare. Final exam. Prereq: History 101. Sem hrs: 3 fall or spring.

History 303. The United States in a Changing World: Critical Issues. 1/2(1x)*
Examines the historical development of selected critical issues confronting contemporary American society. Issues considered include the role of ethnic and minority groups in American life, the impact of technology and war, the expansion of the role of the federal government, the impact of reform, and America's response to crucial world problems during the twentieth century. Final exam. Prereq: History 101 and 202. Sem hrs: 1 1/2 fall or spring.

History 330. Historical Methods. 1(1)
Introduction to methods of advanced historical research and writing. Analysis of major issues in historiography. Final exam. Prereq: History 101 and 202 or department permission. Sem hrs: 3 fall or spring.

History 332. History of U.S. Foreign Relations. 1(1)
Emphasizes the growth and transformation of the U.S. from a small and weak nation into an industrial giant on the world scene. Relates the process by which the U.S. assumed, rejected, and finally accepted the role of a major world power and its associated problems. Examines the objectives and policies of interest groups in determining the nature of the nation's relations with foreign countries. Final exam. Prereq: History 101. Final exam. Sem hrs: 3 fall.

History 335. Regional History of the United States. 1(1)
Examines the special contributions of the West and the South to the evolution of the United States. Each year the course focuses on one of these two regions on an alternating basis: the South (85) and the West (86). When the history of the American West is offered, a field trip to a major historical site or museum connected with the settling and development of the West will be scheduled. Final Exam. Prereq: History 101. Sem hrs: 3 fall. (Cadets may enroll in either Southern U.S. History or in Western U.S. History but not in both.)

History 341. History of Latin America. 1(1)
The discovery, conquest, and growth of Spanish and Portuguese America. Emphasizes political, social, economic, and cultural institutions since the wars of independence with particular stress on twentieth century problems. Final exam. Prereq: History 101. Sem hrs: 3 spring.

History 343. History of East Asia. 1(1)
Emphasis on China and Japan since the coming of the Western powers. Examines fundamental cultural traditions; the political, social, and economic results of nineteenth and twentieth century relationships with Western powers; and the origins of contemporary issues in East Asia. Final exam. Prereq: History 101. Sem hrs: 3 spring.

History 344. Origins of Modern Europe. 1(1)
Traces political, social, economic, intellectual, and military phenomena that affected Europe from Neolithic times until the French Revolution in 1789. Major topics include the Ancient World, the Middle Ages, the Renaissance, the Reformation, the Age of Absolutism and the Enlightenment in Europe. Final exam. Prereq: History 101. Sem hrs: 3 fall.

History 345. Modern European History. 1(1)
Examines the political, social, economic, intellectual, and military history of Europe from the eighteenth century to the present. Emphasis on the French Revolution, the industrial revolution, nationalism and socialism in the nineteenth century, European imperialism, the era of two world wars, and contemporary developments. Final exam. Prereq: History 101. Sem hrs: 3 fall or spring.

History 346. History of Russia and the Soviet Union. 1(1)
Survey of Russian domestic and foreign affairs from the ninth century to the present Soviet regime. Emphasis on political, social, economic, and cultural developments since 1801. Final exam. Prereq: History 101. Sem hrs: 3 fall.

History 351. United States History to World War I. 1(1)
Traces the political, intellectual, social, and economic origins and development of the United States from the first settlements to World War I. Emphasizes the importance of the colonial experience, the revolution, the national period, the spread of democracy, westward expansion, and industrialization in shaping twentieth century America. Final exam. Prereq: Completed or enrolled in History 303. Sem hrs: 3 fall or spring.

History 363. Unconventional Warfare. 1(1)
Surveys the evolution, theory, and practice of insurgent and revolutionary warfare throughout the world from the seventeenth century to the present. Special attention given to Southeast Asia. Examines counterinsurgency operations in various areas and circumstances. Final exam. Prereq: History 202. Sem hrs: 3 spring.

History 368. Twentieth Century Warfare. 1(1)
A study of the nature of modern warfare through the detailed examination of a single war. Alternately deals with one of three representative twentieth century wars: the Arab-Israeli Wars (85), World War II (86) and Vietnam War (87). Each war is treated in specific detail--its causes and military strategies, economic and social implications, leadership, alliances, technology and doctrine, and its results--with the primary objective of gaining a clearer understanding of the complex nature of modern warfare. Final exam. Prereq: History 202. Sem hrs: 3 spring. (Cadets may enroll in only *one* Hist 368 course.)

History 371. Air Power and Modern Warfare. 1(1)
History of the air weapon with primary emphasis on leadership and tactics as they evolved during the twentieth century. Covers both the United States and Europe, stressing the constant interplay among personalities, institutions, theories, technology, combat experience, and evolving doctrine. Final exam. Prereq: History 202. Sem hrs: 3 fall.

History 372. History of the Middle East and North Africa. 1(1)
Introductory survey of historical developments in the Middle East and North Africa from ancient Sumer to the present. Emphasis on the classical empires of the Near East, the triumph of Islam, the dominance of the Ottoman Empire in the sixteenth and seventeenth centuries, western impact since the French Revolution, independence movements in the twentieth century, and contemporary trends and problems. Final exam. Prereq: History 101. Sem hrs: 3 fall.

History 382. Science, Technology, and Warfare. 1(1)
Investigates the impact of science and technology on the character of warfare. Stresses the effects of science and technology on weaponry, doctrine, strategy and tactics. Special consideration given to the problems of adopting new weapons and the relative importance of technology to military success. Final exam. Prereq: History 101 and 202. Sem hrs: 3 fall.

History 457. History of Military Thought. 1(1)
Historical investigation of the ideas of selected major military thinkers from the time of Machiavelli to the present. Emphasis on those writers whose impact on evolving strategy and doctrine, whether on land, sea or in the air, has been most far-reaching. Final exam. Prereq: History 202. Concurrent enrollment in PMS 440 desirable. Sem hrs: 3 fall.

History 480. History of the American Way of Life. 1(1)
Examines the social and cultural evolution of the American way of life. Stresses the impact of the industrial revolution in the nineteenth century and America's rise to world power in the twentieth century. Special consideration given to the unique experiences of racial, religious, and ethnic minorities. Final exam. Prereq: History 303. Sem hrs: 3 spring.

History 494. The American Way of War. 1(1)
Treats America's wars and warriors from Bunker Hill to Linebacker II. Primary attention on how Americans have fought their wars. Considers why America went to war, the raising of armed forces, and the reactions to the effects of war. Particular emphasis given to the role of leadership, both civil and military. Final exam. Prereq: History 202; C1C standing or department permission. Sem hrs: 3 spring.

History 495. Special Topics. 1(1)
Selected topics in history. Final exam/final report. Prereq: History 101. Sem hrs: 3 fall or spring.

History 499. Independent Study. 1(0)
Reading and research in any recognized area of historical study. Areas selected by instructor depend on student interest. Term paper. Prereq: Department permission. Sem hrs: 3 fall or spring.

HUMANITIES (Hum)

Offered by the Departments of English and Foreign Languages. (DFENG, DFF)

Hum 400H. Humanities Honors Seminar. 1(1)
Interdisciplinary course. Brings together and relates diverse ideas, periods, and movements in art, history, language, literature, music, and philosophy of a range and depth commensurate with students' abilities. Report and final exam. Prereq: Firstclass Honors Degree candidate or permission of the Division Chairman. Sem hrs: 3 fall or spring.

Hum 461. Russian Literature. 1(1)
A study of representative Russian authors (such as Pushkin, Chekhov, Dostoevsky, Tolstoy, Sholokhov, Pasternak, and Solzhenytsyn) in their historical and cultural setting and their impact on the shaping of the national character of the Russian people. Final exam. Sem hrs: 3 fall.

Hum 463. Far Eastern Literature. 1(1)

An historical survey and analysis of major literary works of the Far East with emphasis on China and Japan. Final exam. Sem hrs: 3 spring.

INSTRUCTIONAL TECHNOLOGY (Inst Tch)

Offered by the Directorate of Audiovisual Services (DFSEA)

Inst Tch 101. Reading Improvement. 0(1x)
Improvement of reading skills to include general rate increases while maintaining and improving comprehension levels, as well as proper reading approaches in the content areas. Final exam. Sem hrs: 1/2 fall.

Inst Tch 102. Basic Typing. 0(1x)
Basic typing limited to skills needed for theme, report, and military/personal correspondence typing. Final exam. Pass/fail. Sem hrs: 1/2 fall.

LAW (Law)

Offered by the Department of Law (DFL)

Law 300. An Introduction to Law. 1(1)*
An introduction to the judicial process and legal reasoning. Examines the nature, history and functions of law and its application to contracts, property, torts, and constitutional rights. Final exam. Prereq: At least C3C standing and Pol Sci 201. Sem hrs: 3 fall or spring.

Law 400. Law for Commanders. 1(1)*

A survey of the legal principles encountered by officers in their official and personal capacities, including crimes, evidence, military justice, administrative law, standards of conduct, problems of command, laws of war, and personal estate planning. Final exam. Prereq: Law 300 and C1C standing. Sem hrs: 3 fall or spring.

Law 451. American Constitutional Law. 1(1)
An inquiry into legal problems arising from the U.S. Constitution. Examines the courts' role in limiting federal and state power and in protecting individuals against unconstitutional governmental activity. Final exam. Prereq: Pol Sci 201 and C1C or C2C standing. Sem hrs: 3 fall.

Law 461. International Law. 1(1)
The role of international law in the decision-making process of sovereign nations. Topics include the law of the sea, airspace, and space, sovereign immunity, the legal status of military personnel stationed abroad, and the use of force by nations. Final exam. Prereq: C1C or C2C standing. Sem hrs: 3 fall.

Law 462. Government Contract Law. 1(1)
Comprehensive study of government contract law with emphasis given to basic legal principles, procurement policy, methods of procurement, types of contracts, contract clauses, taxation, regulation, social and economic provisions, disputes procedures, default remedies and terminations. Final exam. Prereq: Law 300; C1C or C2C standing. Sem hrs: 3 spring.

Law 495. Special Topics. 1(1)
A seminar on the legal implications of contemporary social, economic, and political problems and the ability of the American legal system to solve those problems. Final report. Prereq: C1C or C2C standing and department permission. Limited enrollment. Sem hrs: 3 spring.

MANAGEMENT (Mgt)

Offered by the Department of Management (DFM)

Mgt 203. Introduction to Management. 1/2(1x)*
Introduction to the principles and techniques of planning, organizing and controlling. Theoretical concepts with applications to the needs of both cadet managers and future Air Force officers. Case studies and experiential problems. Final exam. Prereq: Concurrent enrollment in Econ 222 (for scheduling). Sem hrs: 1 1/2 fall or spring.

Mgt 341. Fundamentals of Accounting. 1(1)
Introduction to financial accounting. Fundamental accounting concepts and techniques necessary for effective administration of an organization. Analysis and recording of transactions, preparation and analysis of financial statements, time value of money, and price level adjustments. Final exam. Sem hrs: 3 fall or spring.

Mgt 360. Introduction to Operations Research. 1(1)
Introduces the basic management science techniques with emphasis on applications to managerial decision making. Topics include model building, decision analysis, linear programming, network analysis, inventory theory, queuing theory, and simulation. Emphasis on developing ability to critique and use the results of other operations research analysis. Final exam. Prereq: Math 220 or 357. Sem hrs: 3 fall or spring.

Mgt 361. The Management of Human Resources. 1(1)
Surveys the field of human resource management: manpower and career planning, recruitment, selection, placement, training, communication, discipline, and change management. Emphasis on the role of the supervisor and the art of negotiation as a mode of interpersonal transaction. Discusses impact of external factors (such as government regulations and labor unions) on an organization's human resource program. Lecture, guided discussions, case studies, experiential exercises and individual research. Research project, field trip. Prereq: Completed or enrolled in Mgt 203. Sem hrs: 3 fall or spring.

Mgt 364. Operations Research/Management Science II. 1(1)
A second introductory course in the mathematical techniques of operations research/management science emphasizing applications. Topics include scheduling, decision analysis, nonlinear programming, and inventory. Final exam. Prereq: Math 363. Sem hrs: 3 spring.

Mgt 382. Introduction to Finance. 1(1)
An introduction to financial markets, specific investment vehicles (corporate stocks and bonds, mutual funds, government and municipal bonds, real estate and commodities), investment analysis and how financial decisions should be made. Topics include capital markets and institutions, risk and portfolio analysis and financial analysis. A term project provides experience in developing an investment portfolio and in investment decision making. Final exam. Prereq: Econ 222; Mgt 341 is desirable. Sem hrs: 3 fall or spring.

Mgt 432. Managerial Accounting. 1(1)
Focuses on the types of accounting information and their appropriate uses by internal managers. Discusses full cost or conventional cost accounting, differential accounting, and responsibility accounting. Lectures, guided discussions, problems, cases, and a field trip. Prereq: Mgt 341. Final Exam. Sem hrs: 3 fall or spring.

Mgt 437. Managerial Finance. 1(1)
Develops basic stock and bond valuation concepts and analyzes how the principles of financial management can be used to help maximize the value of a firm. Exposure to current financial problems and their solutions through case studies and problems. Final exam. Prereq: Mgt 341. Mgt 382 highly desirable, Mgt 432 desirable. Sem hrs: 3 fall.

Mgt 446. Organizational Theory. 1(2)
Internal dynamics of complex organizations and their environmental relationships. Considers organization theories and research conclusions. Diversity of organizational simulations and experiences, with emphasis on organizational diagnosis and design. Term project or final exam. Prereq: Mgt 203. Sem hrs: 3 fall or spring.

Mgt 462. Case Studies in Operations Research. 2(2)
Case studies in advanced operations research/management science techniques including transportation problems, networks, mathematical programming and simulation. Emphasis on problem recognition, model formulation and Air Force applications. Term project. No final exam. Prereq: Mgt 364. Sem hrs: 3 spring.

Mgt 472. Administrative Policy and Strategy. 1(2)
Stresses problem identification, strategic planning, decision theory, policy formulation and general management issues through the use of cases and critical incidents. Reviews current developments in management, and applies to actual situations, including at least one field trip. Final exam or term project. Prereq: C1C standing. Sem hrs: 3 spring.

Mgt 475. Principles of Marketing. 1(1)
A study of the concepts, tools, and techniques of marketing management. Discusses markets, life-cycle, product development, procurement, total cost concepts, product and service promotion, and distribution planning. Films, case studies and guest speakers elaborate concepts. A term project focuses on applications of marketing management to Air Force and business organizations. Term project. No final exam. Prereq: Mgt 203. Sem hrs: 3 fall.

Mgt 477. Production and Operations Management. 1(1)
Surveys operations management concepts and techniques, which refer to the management functions associated with producing goods or providing services. The objectives of operations management are to produce an optimal amount of goods or services at the appropriate quality level, on time, within cost and resource constraints. Topics include planning, forecasting, inventory control, scheduling, work measurement, transportation, and facility location and layout. Research project, field trip. No final exam. Prereq: Mgt 360. Sem hrs: 3 fall.

Mgt 485. Systems Acquisition and Management. 1(1)
Discussion of management problems inherent in development and acquisition of large, complex systems and the buyer-seller relationships of government and its contractors. Major areas of study

include: the acquisition environment, policy formulation, management of acquisition activities, planning, negotiation strategy and tactics. Case studies of recent weapon systems programs and a simulated negotiation of a new weapon system. Final exam. Sem hrs: 3 spring.

Mgt 491. Management Information Systems. 1(1)
Focuses on systems analysis and the analytical tools necessary to develop and evaluate both formal and informal information systems. Analyzes the role of information processing in managerial decision making. Lab. Term project. No final exam. Prereq: Mgt 203, Comp Sci 100. Sem hrs: 3 fall or spring.

Mgt 495. Special Topics. 1(1)
Selected topics in management. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Mgt 499. Independent Study. 1(0)
Tutorial investigation of a specific area of management. No final. Sem hrs: 3 fall or spring.

MATHEMATICS (Math)

Offered by the Department of Mathematical Sciences (DFMS)

Math 130. Pre-Calculus Mathematics. 1(2x)
College algebra and trigonometry. Final exam. Prereq: Department recommendation. Sem hrs: 3 fall.

Math 131. Calculus I. 1(1) or 1(2x)
Functions; plane analytic geometry; limits, differentiation theorems; rules for finding derivatives, including differentiation of transcendentals; applications of the derivative in graphing, maximization, and related rates. Calculator use is stressed throughout the course. Final exam. Sem hrs: 3 fall or spring.

Math 132. Calculus II. 1(1)* or 1(2x)*
Derivatives and antiderivatives; definite integrals; integration techniques to include change of variables, trig substitution, integration by parts, partial fractions, tables of integrals, improper integrals, and numerical integration; area between curves, solids of revolution and work; conic sections. Final exam. Prereq: Math 131. Sem hrs: 3 fall or spring.

Math 133. Calculus III. 1(1)* or 1(2x)* or 1(2)
Multiple variable calculus, including vectors, multiple integrals and partial differentiation; solid analytic geometry to include lines, planes, and surfaces in 3-space; Final exam. Prereq: Math 132. Sem hrs: 3 fall or spring.

Math 211. Differential Equations with Matrix Algebra. 1(1) or 1(2)
Solutions to systems of linear algebraic and ordinary differential equations. Topics include Gauss-Jordan elimination, determinants, separable equations, first order linear equations, higher order constant coefficient linear equations, sequences and series, series solutions, and numerical methods. Final exam. Prereq: Math 133. Sem hrs: 3 fall or spring.

Math 220. Probability and Statistics. 1(1)
Introduction to statistics, including frequency distributions, sampling techniques, random variables, statistical inference, hypothesis testing, reliability, regression, and correlation analysis. Final exam. Prereq: Math 133. Sem hrs: 3 fall or spring.

Math 310. Mathematical Modeling. 1(1)
An introductory course in mathematical modeling intended for basic sciences/engineering divisional and space science majors. Students learn to apply various methods to model and solve real world problems. Course grade is weighted heavily on student team projects which require creative solutions to Air Force oriented problems. Final exam. Prereq: Completion of core math sequence including Math 220 or 357. Sem hrs: 3 fall or spring.

Math 320. Foundations of Mathematics. 1(1)
Spans a gap between introductory calculus and more theoretically oriented courses in mathematics and the basic sciences. Axiomatic structure of mathematics, basic logic, basic methods of modern mathematics, set theory, relations, functions, the real and natural number systems, and algebra analysis. Final exam. Prereq: Math 211 or Math 355. Sem hrs: 3 fall or spring.

Math 330. Fourier Analysis, Laplace Transforms, and Applied Vector Analysis. 1(1)
Complex variables, including analyticity and elementary functions. Fourier series and Transform. Laplace Transform and applications. Vector calculus: differential (gradient, divergence, curl) and integral (Divergence Theorem, Stokes' Theorem, Green's Lemma). Final exam. Prereq: Math 211 or Math 355. Sem hrs: 3 fall or spring.

Math 341. Introductory Numerical Analysis. 1(1)
Numerical solutions of nonlinear equations; numerical methods in linear algebra; theory of polynomial approximations; interpolation theory; error analysis; numerical integration and numerical solution of differential equations; computer programming laboratory exercises. Final exam. Prereq: Math 211 or Math 355; Comp Sci 100. Sem hrs: 3 spring.

Math 343. Computational Matrix Algebra. 1(1)
Properties of matrices and linear operators, real linear space theory, numerical solution of linear systems of equations, numerical calculation of eigenvalues and eigenvectors, supplementary topics and computational examples as time permits. Final exam. Prereq: Math 211 or Math 355; Comp Sci 100 or department permission. Sem hrs: 3 fall or spring.

Math 351. Applied Differential Equations. 1(1)
Second order linear differential equations; numerical techniques; power series solutions; systems of first order linear differential equations; and partial differential equations. Final exam. Prereq: Math 211. Sem hrs: 3 fall or spring.

Math 355. Ordinary Differential Equations with Applications. 1(1)
Systems of algebraic equations; first order ordinary differential equations; second order linear differential equations; Laplace transforms; numerical techniques; power series solutions; systems of linear differential equations. Successful completion fulfills requirement for Math 211. Final exam. Prereq: Math 133 and department permission. Sem hrs: 3 fall or spring.

Math 357. Probability with Statistics. 1(1)
Probability; discrete and continuous random variables and their distributions; characterizations and functions of random variables; sampling distributions; point and interval estimation and hypothesis testing. Successful completion fulfills requirement for Math 220. Final exam. Prereq: Core math sequence or department permission. Sem hrs: 3 fall or spring.

Math 358. Statistics. 1(1)
Techniques of statistical inference; sampling distributions; hypothesis testing; parameter estimation; confidence intervals; analysis of variance; regression analysis; nonparametric analysis; experimental design considerations; introduction to computer statistics program and introduction to reliability. Final exam. Prereq: Math 357. Sem hrs: 3 fall or spring.

Math 363. Operations Research/Management Science I. 1(1)
Introduction to mathematical techniques of operations research/management science emphasizing applications. Topics include mathematical modeling, linear programming, queuing, dynamic programming, and networks. Final exam. Prereq: Math 220 or Math 357. Sem hrs: 3 fall.

Math 441. Linear Programming. 1(1)
Review of matrix algebra, convex sets and linear inequalities. Theory and computer implementation of the simplex and transportation algorithms. Duality theory and sensitivity/post-optimality analysis. Mathematical modeling and Air Force applications. Introduction to integer programming models and algorithms. Final exam. Prereq: Math 343. Sem hrs: 3 fall.

Math 451. Complex Variables. 1(1)
Analytic functions; mapping, integrals; power series; residues and poles, applications. Final exam. Prereq: Math 211 or Math 355. Sem hrs: 3 spring.

Math 455. Advanced Engineering Mathematics. 1(1)
Applied partial differential equations; solutions of boundary value problems. Methods of solution include eigenfunction expansion, Green's formulas and variation of parameters. Introduction to numerical solution methods. Final exam. Prereq: Math 351, Math 355, or Math 468. Sem hrs: 3 fall or spring.

Math 457. Probabilistic Models in Operations Research. 1(1)
Introduces the concepts of sequences of random variables, Markov chains, branching processes, and birth-death processes with emphasis on military applications. Includes an operations research capstone project which gives experience as scientific analysts. Final exam or final report. Prereq: C1C standing; Math 357. Sem hrs: 3 spring.

Math 460. Linear Algebra. 1(1)
Simultaneous linear equations, orthogonality, determinants, eigenvalues, and eigenvectors, computations with matrices and specialized matrices, and other applications and topics as time permits. Final exam. Prereq: Math 320 or department permission. Sem hrs: 3 fall.

Math 466. Advanced Calculus I. 1(1)
Theoretical concepts of calculus for functions of one variable. Final exam. Prereq: Math 320 or department permission. Sem hrs: 3 fall.

Math 467. Advanced Calculus II. 1(1)
Theoretical concepts in multivariable calculus. Final exam. Prereq: Math 466. Sem hrs: 3 spring.

Math 468. Intermediate Differential Equations. 1(1)
Linear and nonlinear differential equations from both computational and theoretical points of view. Topics include nth order linear equations, systems of differential equations, series solution techniques, stability theory, and Lyapunov functions. Final exam. Prereq: Math 211 or Math 355; Math 460; Math 466. Sem hrs: 3 spring.

Math 495. Special Topics. 1(1)
Selected advanced topics in mathematics. Final exam. Prereq: Department permission. Sem hrs: 3 fall or spring.

Math 499. Independent Study and Research. 1(0)
Individual study and/or research under the direction of a faculty member. Oral midterm and final; term paper. Prereq: Department permission. Sem hrs: 3 fall or spring.

MECHANICS (Mech)

Offered by the Department of Engineering Mechanics (DFEM)

Mech 210. Mechanics and Materials in Engineering Design. 1(2)
Strength of materials and materials science as applied to system design. Stress and deformation analyses of systems subjected to axial, torsional, flexural, and combined loads. Evaluation of materials; their properties, mechanical behavior, and failure mechanisms in response to both environmental effects and various external loading conditions. Influence of thermomechanical processing and composition on material properties. Semester-long design project. Final exam. Prereq: Engr 110 and Math 133. Sem hrs: 3 fall or spring.

Mech 320. Dynamics. 1(2)
Equilibrium in three dimensions. Kinematics including absolute and relative motion. Kinetics including force-mass-acceleration, work-energy, and impulse-momentum. Free and forced linear vibrations of a single degree of freedom system. Vector solution methods emphasized. Final exam. Prereq: Engr 110; Math 211 or Math 355. Sem hrs: 3 fall or spring.

Mech 331. Aerospace Structural Mechanics. 1(1)
Analysis of aircraft and space vehicle structural components. Effects of bending, torsion and shear on typical aerospace structural components. Introduction to energy methods. Statically indeterminate beams, shear center and shear flow. Final exam. Prereq: Mech 210. Sem hrs: 3 fall.

Mech 332. Aerospace Structural Design. 1(2)
Applications of Mech 331 concepts to the design of typical aerospace structures. Introduction to aircraft loads, connection design, inelastic design. Buckling of typical aerospace structures. Introduction to composite structures. Lab. Prereq: Mech 331 and Aero 311. Sem hrs: 3 spring.

Mech 342. Introduction to Engineering Materials. 1(1)
Basic concepts of electronic structure, atomic bonding and crystallographic notation. Principles of metallurgical thermodynamics and kinetics applied to phase diagrams and strengthening mechanisms. Electronic energy theories used to explain the behavior of conductors, semiconductors and insulators. Field trip. Final exam. Prereq: Mech 210; Math 211 or Math 355. Sem hrs: 3 spring.

Mech 352. Mechanical Properties of Materials. 1(1)
Behavior of materials under simple and combined stress systems. Crystal structure, dislocation theory and strengthening mechanisms. Principles of plastic deformation, brittle fracture and fatigue failure theories. Fracture mechanics, behavior of composite materials, analysis of materials and design considerations. Final exam. Prereq: Mech 210; Math 211 or Math 355. Sem hrs: 3 fall or spring.

Mech 395. Automotive Systems Analysis. 1(2)
An analysis of the modern passenger automobile as an engineering system. Engineering theory applied to the design, maintenance, and integration of automotive subsystems. Theoretical analyses of power plants, clutches, transmissions, drive trains, suspension systems, tires, brakes, steering dynamics, and overall vehicle performance including economy. Final report. Prereq: C1C or C2C standing; Mech 320. (Course enrollment limited; departmental approval required.) Sem hrs: 3 fall or spring.

Mech 420. Vibrations. 1(1)
Free and forced vibrations of single and multidegree-of-freedom linear and nonlinear systems. Matrix methods; vibrations of continuous media. Final exam. Prereq: Math 351 or Math 355; Mech 320 or Physics 357. Sem hrs: 3 spring.

Mech 432. Matrix Structural Analysis. 1(1)
Analysis and design of truss and frame structures using matrix methods. Element stiffness matrices obtained from both equilibrium and energy considerations. Introduction to FORTRAN programming and finite element methods. Application of digital computers to structural analysis. Design problem. Final exam. Prereq: Mech 331. Sem hrs: 3 fall.

Mech 451. Physical Metallurgy. 1(2)
Physical metallurgy related to properties of materials. Materials structure and imperfections, diffusion, thermodynamics, phases and phase transformations, and thermomechanical processing. Design of treatment processes to foster particular material properties. Discussion of steel and other alloy systems. Lab. Semester-long knife design project. Final exam. Prereq: Mech 342. Sem hrs: 3 fall.

Mech 459. Advanced Aerospace Materials. 1(1)
Discussion of processing and applications of composites, ceramics and powder metals in aerospace structures. Strong solids, brittle failure theory, use of Weibull statistics in brittle materials and bundle theory in composites. Rule of mixtures, determination of elastic constants and strength criteria for composite laminae. Basic elasticity, transformation and constitutive equations. Design and fabrication criteria. Final exam. Prereq: Mech 210. Sem hrs: 3 spring.

Mech 461. Experimental Mechanics. 1(2)
Introduction to experimental measurements and their role in the design process. Includes theory and application of static and dynamic instrumentation, strain gages, transducers, photoelasticity, holography and nondestructive testing. Hands-on laboratory experience constitutes one-half of course. Laboratory sessions involve analysis, design, test plans, calibration and testing. Final exam. Lab. Prereq: Mech 320 or Physics 357; completed or enrolled in Mech 331. Sem hrs: 3 fall.

Mech 462. Engineering Design. 1(2)
Application of engineering principles to the creative design process. Emphasizes analysis, design and construction of prototype models. Topics include the creative design process, basic manufacturing techniques, technical communications, measurement systems and project management methods. Major design project and a final report. Lab. Prereq: Mech 320 or Physics 357; Mech 451 or Mech 461. Sem hrs: 3 spring.

Mech 466. Fluid Mechanics. 1(1)
Basic concepts of fluid statics. Application of Newton's Second Law and mass and energy conservation principles. One-dimensional laminar and turbulent flow in closed conduits. Two-dimensional inviscid, irrotational flow around "submerged" objects and viscous flow using boundary layer theory. Analogies with steady state heat conduction and molecular diffusion. Final exam. Prereq: Mech 210; Mech 320; Math 351 or Math 355. Sem hrs: 3 fall and spring.

Mech 482. The Finite Element Method In Mechanics. 1(1)
Finite element techniques in mechanics. Derivation of element stiffness for beam, two-dimensional plane and plate bending functions. Introduction to the treatment of dynamic and stability problems. Practical applications using digital computers. Final exam. Prereq: Mech 432. Sem hrs: 3 spring.

Mech 495. Special Topics. 1(1)
Selected topics in mechanics. Final exam or final report. Prereq: Department permission. Sem hrs and offering time determined by department (not more than 3 sem hrs).

Mech 499. Independent Study. Var(0)
Individual study, research, or design on a topic established with the permission of the department head. Final report. Sem hrs: 1-3 fall or spring. The course units awarded depend on the number of semester hours.

MILITARY TRAINING (Mil Tng)

Offered by the Commandant of Cadets. (Administered by the Military Training Division under the Deputy Commandant for Military Instruction--exceptions noted under course descriptions.)

Mil Tng 100. Basic Cadet Training. 0(0)
Approximately five-week transition period from civilian to military life. Indoctrination in the overall Academy program, cadet regulations, the Honor Code, manual of arms, drill, customs and courtesies and other general military subjects. Introduction to basic Air Force weapons, firing the M-16 rifle and a .38 pistol; and a field encampment. Pass/fail. No final. Prereq: Concurrent enrollment in Phy Ed 100. Sem hrs: 3 summer.

Mil Tng 220. Survival, Evasion, Resistance and Escape (SERE). 0(0)
Three-week Basic Aircrew Survival Training program of approximately two weeks on-base training covering global aspects of survival and code of conduct and approximately one week of field training. Completion satisfies USAF Survival Training requirements. Pass/fail. No final. Sem hrs: 3 summer.

Mil Tng 230. CONUS Field Trip. 0(0)
A one-week TDY program designed to acquaint Thirdclass cadets with the operational mission of two bases and major commands. Pass/fail. No final. Sem hrs: 1 summer.

Mil Tng 301. Operation Air Force Program. 0(0)
Conducted at selected Air Force bases. Provides exposure to an operational Air Force unit and functions of an airman, NCO, and junior officer. Pass/fail. No final. Sem hrs: 2 summer.

Mil Tng 303. RECONDO Training. 0(0)
Field tactical training conducted by the U.S. Army at Fort Carson and North Cheyenne Canyon. Pass/fail. No final. Sem hrs: 2 summer.

Mil Tng 304. Naval Special Warfare Orientation. 0(0)
Diving training program conducted by the U.S. Navy at San Diego. Satisfactory completion results

in being certified world-wide scuba qualified. Pass/fail. No final. Sem hrs: 2 summer.

Mil Tng 306. BSA Philmont. 0(0)
Positions at Philmont Scout Ranch in Cimarron, New Mexico, as rangers or instructors in the staff camp areas. Pass/fail. No final. Sem hrs: 2 summer. In lieu of leave only.

Mil Tng 310. Training In Personal Skills. 0(0)
Promotes personal growth and interpersonal effectiveness. Provides training in the human relations skills necessary for success in any group. Intensive small group experiences led by experienced group facilitators. Teaches giving/receiving feedback, feeling comfortable in a group, and coping with stress skills. Sem hrs: 2 summer.

Mil Tng 332. Summer Scientific Seminar. 0(0)
Two week session as counselors and escorts for approximately 450 high school seniors from all 50 states. Qualified cadets help with some of the scientific workshops. Sem hrs: 2 summer.

Mil Tng 352. Basic Airborne Training. 0(0)
Conducted at the U.S. Army Infantry School, Fort Benning, Georgia. Includes basic skills of static line parachute jumping. Pass/fail. No final. Sem hrs: 2 summer.

Mil Tng 402. BCT Leadership Duty. 0(0)
Leadership positions as instructors, officers or NCOs in the cadet chain of command in the Basic Cadet Training program for the new fourthclass. Pass/fail. No final. (Administered by the Deputy Commandant for the Cadet Wing and the Deputy Commandant for Military Instruction.) Sem hrs: 2 summer.

Mil Tng 407. Composite Group Leadership Duty. 0(0)
Cadet officer and NCO leadership positions maintaining command, control, and accountability and providing billeting for all cadets taking summer academic courses and transient cadets using cadet area facilities. Pass/fail. No final. (Administered by the Deputy Commandant for the Cadet Wing.) Sem hrs: 2 summer.

Mil Tng 409. Academy Awareness Program. 0(0)
Selected cadets serve as counselors and tutors for minority group students in the San Diego and Miami school districts. (Administered by the Minority Affairs Division under the Office of Registrar.) Sem hrs: 2 summer.

Mil Tng 411. Air Training Command Leadership Duty. 0(0)
Leadership positions with a Basic Military Training Squadron at Lackland AFB, Texas, as assistants to squadron commanders and as basic airmen training instructors and counselors. Pass/fail. No final. Sem hrs: 4 summer.

Mil Tng 420. SERE Leadership Duty. 0(0)

Leadership positions as instructors, officers, and NCOs in the cadet chain of command for the Thirdclass SERE training program. Pass/fail. No final. Sem hrs: 2 summer.

Mil Tng 431. Office of Public Affairs. 0(0)
Work directly with the Public Information and Internal Communications Divisions of the Office of Public Affairs. Duties involve escorting tours through Academy facilities; assisting with visitors at the Visitors Center, the summer visitor booths and Arnold Hall; attending civic functions to present briefings, working with civilian media; and preparing news releases; working with the staff of the *Falcon Flyer* and Channel 6. Sem hrs: 2 summer. In lieu of leave.

Mil Tng 491. Astronomy Operations. 0(0)
Leadership training at the Academy Planetarium and Observatory during each summer session. Interview with an Astronomy Branch instructor (50th ATS) required prior to acceptance. Completion of an Astronomy or Astronomy-related course at USAFA is recommended. (Administered by 50th ATS under the Deputy Commandant for Military Instruction.) Sem hrs: 2 summer.

Mil Tng 495. Special Training Programs. 0(0)
Special training, participation, observation, leadership, and/or instructional programs conducted to fill a temporary or unforeseen need or to test a new program or concept prior to full implementation. Pass/fail. No final. Sem hrs, leadership credit, and duration may vary depending on the nature of the program (not to exceed 7 1/2 sem hrs).

PHILOSOPHY (Philos)

Offered by the Department of Philosophy and Fine Arts (DFPFA)

Philos 310. Ethics. 1(1)*
Major moral theories and their application to contemporary moral problems with special emphasis upon the moral problems of the profession of arms. Final exam. Prereq: C1C, C2C, C3C standing or department permission. Sem hrs: 3 fall or spring.

Philos 311. War, Morality, and the Military Profession. 1(1)
An in-depth examination of the moral issues raised by the profession of arms. Presumes an understanding of moral theory, including as a minimum relativism, egoism, utilitarianism and deontology. May be taken as a sequel to Philos 310, or substitutes for Philos 310 (with department permission) if the student has independently studied ethical theory. Final exam. Prereq: Department permission. Sem hrs: 3 spring.

Philos 330. Introduction to the Philosophy of Science. 1(1)
An analysis of the basic assumptions and principles of the sciences. Topics include the scientific method, scientific laws, theory construction, scientific explanation, probability, the relationship between the social sciences and the physical sciences, and the relationship between the sciences and the humanities, especially in the formation of values. Final exam. Prereq: C1C or C2C standing or department permission. Sem hrs: 3 fall of even-numbered years.

Philos 350. Problems in Philosophy. 1(1)
A philosophical examination of several classical and contemporary approaches to a number of standard metaphysical, epistemological and theological problems. Final exam. Prereq: C1C, C2C, C3C standing or department permission. Sem hrs: 3 fall of odd-numbered years.

Philos 360. Applied Reasoning. 1(1)
An introduction to basic deductive and inductive applied logic. Includes an analysis and evaluation of the notions of evidence and good arguments in fields such as law, medicine, science, engineering, behavioral and social sciences, and military studies. Concentration on reasoning in a specific field of interest. Final exam. Prereq: Department permission. Sem hrs: 3 fall.

Philos 370. Introduction to Symbolic Logic. 1(1)
Advanced examination of propositional and predicate languages, model theory, quantifiers, proofs, identity theory, and properties of logical systems. Final exam. Prereq: Completed or enrolled in Comp Sci 100. Sem hrs: 3 spring.

Philos 382. American Philosophy. 1(1)
An examination of the philosophic background of Puritanism, the Revolutionary period, transcendentalism and pragmatism with special reference to the thought of major American philosophers such as Pierce, James, Royce, Santayana, Dewey. Final exam. Prereq: Completed or enrolled in Philos 310. Sem hrs: 3 spring.

Philos 400. Great Religions of the World. 1(1)
Comparative examination of the relation of religion to morality; the nature of religious aspirations; the spiritual influence of religion upon culture and society; the sacred scriptures; the concept of God, salvation, evil, and the afterlife. Examines Christianity, Buddhism, Judaism, Hinduism, Confucianism, and Islam. Final exam. Prereq: C1C, C2C, or C3C standing. Sem hrs: 3 fall or spring.

Philos 495. Seminar in Philosophy. 1(1)
Selected topics in philosophy. Final exam or final report. Prereq: Department permission. Sem hrs: 3 fall or spring.

Philos 499. Independent Study. 1(0)
Philosophical research guided by an instructor. Topics and meetings arranged with the instructor. No final. Prereq: Department permission. Sem hrs: 3 fall or spring.

PHYSICAL EDUCATION (Phy Ed)

Offered by the Department of Physical Education under the Director of Athletics (AH)

Phy Ed 100. Basic Physical Training. 0(0)
Preparation for strenuous physical education and athletics by development of physical strength, endurance, agility, and coordination through conditioning exercises and sports competition. Passing cadet minimums for Physical Fitness Test and swimming test. Special training in conditioning as needed. Pass/fail. Sem hrs: 2 summer.

Phy Ed 105-106. Intramural Athletics/Physical Fitness Test/Aerobic Test. 0(0)
Intramural athletics plus cadet minimums on Physical Fitness and Aerobic Tests. Pass/fail. Sem hrs: Phy Ed 105 - 1 fall; Phy Ed 106 - 1 spring.

Phy Ed 120. Gymnastics, Swimming, Boxing (Men), Physical Development (Women), optional intercollegiate sport and optional elective. 0(2xx)
Instruction in gymnastics, swimming, boxing and physical development. Option to participate in intercollegiate athletics. Option to take one of five elective sub-courses. Remedial instruction in swimming for designated cadets. Sem hrs: 1 fall and spring.

Phy Ed 205-206. Intramural Athletics/Physical Fitness Test/Aerobic Test. 0(0)
Intramural athletics plus passing cadet minimums on Physical Fitness and Aerobic tests. Pass/fail. Sem hrs: Phy Ed 205 - 1 fall; Phy Ed 206 - 1 spring.

Phy Ed 220. Introduction to Racquet Sports, Wrestling (Men), Tennis, Aerobic Fitness (Women), optional intercollegiate sport and optional elective. 0(2xx)
Instruction in racquet sports, wrestling, aerobic fitness, and tennis. Option to participate in intercollegiate athletics. Option to take one of five elective sub-courses. Remedial instruction in swimming for designated cadets. Sem hrs: 1 fall or spring.

Phy Ed 305-306. Intramural Athletics/Physical Fitness Test/Aerobic Test. 0(0)
Intramural athletics plus passing cadet minimums

on the Physical Fitness and Aerobics tests. Pass/fail. Sem hrs: Phy Ed 305 - 1 fall; Phy Ed 306 - 1 spring.

Phy Ed 320. Judo, Golf, Water Survival, optional intercollegiate sport and optional elective. 0(2xx)
Instruction in golf, judo and water survival. Option to participate in intercollegiate sports. Option to take one of five elective sub-courses. Remedial instruction in swimming for designated cadets. Sem hrs: 1 fall and spring.

Phy Ed 405-406. Intramural Athletics/Aerobics Test. 0(0)
Intramural athletics and must pass Aerobics Fitness Test. Pass/fail. Sem hrs: Phy Ed 405 - 1 fall; Phy Ed 406 - 1 spring.

Phy Ed 420. Volleyball, Unarmed Combat, Physical Fitness Methods, optional intercollegiate sport and optional elective. 0(2xx)
Instruction in volleyball, unarmed combat and developing a personal fitness program. Option to participate in intercollegiate sports. Option to take one of five elective sub-courses. Remedial instruction in swimming for designated cadets. Sem hrs: 1 fall and spring.

Phy Ed 440. Physiology of Exercise. 1(1)
Selected classroom and laboratory studies of the human organism in motion. An examination of the physiological factors affecting human performance under various degrees of stress and environmental conditions. Emphasis is placed on control mechanisms, characteristics of muscular contraction, energy sources and other body adjustment mechanisms in response to physical exercise. No final. Prereq: Department permission. Sem hrs: 3 fall.

Phy Ed 460. Scientific Principles and Methods of Coaching. 1(1)
Scientific principles of coaching from selected team and individual sports. Analyzes the fundamental factors underlying athletic performance in relation to the laws of physics. Emphasizes the philosophy and methods of human motivation in athletics from various perspectives: biological, physiological, psychological and sociological. No final. Prereq: Department permission. Sem hrs: 3 spring.

Phy Ed 495. Special Topics. 1(1)
Selected topics in the exercise sciences. Final exam or report. Prereq: Department permission. Sem hrs: 3 with offering time determined by department.

Phy Ed 499. Independent Study. 1(0)
Individual research and study in the physical education field under the direction of a faculty member. Emphasizes the use of laboratory facilities. No final. Research report. Prereq: Phy Ed 440 and department permission. Sem hrs: 1-3 fall or spring.

PHYSICS (Physics)

Offered by the Department of Physics (DFP)

Physics 211. General Physics I. 1(1)*
Reviews mechanics, emphasizing work and energy. Introduction to fluid mechanics and thermodynamics. Emphasizes the conservation laws and the use of vectors and calculus. Final exam. Prereq: Engr 110; completed or enrolled in Math 211 or Math 355. Sem hrs: 3 fall or spring.

Physics 311. General Physics II. 1(1)*
Fundamental principles of electricity and magnetism, wave motion, and optics. Emphasizes the conservation laws and the use of vectors and calculus. Final exam. Prereq: Physics 211. Sem hrs: 3 fall or spring.

Physics 357. Classical Mechanics I. 1(1)
Particle kinematics and dynamics, conservation laws, gravitation, vibrations, rotating coordinate systems, central forces and an introduction to rigid body motion. Fundamentals of mathematical physics including vector calculus. Final exam. Prereq: Physics 211; completed or enrolled in Math 351 or Math 355. Sem hrs: 3 fall.

Physics 358. Classical Mechanics II. 1(1)
General rigid body motion, Lagrangian and Hamiltonian dynamics, vibrations, and normal modes. Fundamentals of mathematical physics, including matrix algebra, integral transforms, partial differential equations and orthogonal functions. Final exam. Prereq: Physics 357. Sem hrs: 3 spring.

Physics 363. Introduction to Modern Physics I. 1(1)
Introduction to special relativity. Consideration of the dual nature of light and of the wave nature of particles. Investigates the Bohr model of the atom. Introduction to quantum mechanics and its application to problems involving simple forms of potential energy. Application of the Schroedinger equation to the hydrogen atom. Final exam. Prereq: Completed or enrolled in Physics 311; completed or enrolled in Math 351 or Math 355. Sem hrs: 3 fall.

Physics 364. Introduction to Modern Physics II. 1(1)
Quantum mechanical approach to angular momentum of the hydrogen atom. Atomic and molecular spectra. Investigation of various models of the nucleus. Nuclear reactions and decay schemes; fission and fusion. Particle detectors and accelerators. Brief introduction to solid state physics. Discussion of elementary particle theory. Final exam. Prereq: Physics 363 in preceding semester. Sem hrs: 3 spring.

Physics 365. Thermal and Statistical Physics. 1(1)
Classical thermodynamics emphasizing thermodynamic laws and applications to cycles. Kinetic theory, statistical thermodynamics, quantum statistics. Final Exam. Prereq: Physics 363 or department permission. Sem hrs: 3 spring.

Physics 370. Introduction to Space Science. 1(1)
A conceptual survey of the space environment beginning at the earth's surface and extending out beyond the boundaries of our galaxy. Topics include meteorology, climatology, planetary ionospheres and magnetospheres, solar phenomena, solar-terrestrial interactions, stellar structure, galactic structure, and origin of the universe. Final exam. Prereq: Completed or enrolled in Physics 311. Sem hrs: 3 fall or spring.

Physics 382. Laser Physics. 1(1)
Theory of laser operation. Fundamentals of the laser medium, pumping, resonators and optical cavities, beam propogation, laser interactions with materials, and ideal Gaussian beams. Air Force application of lasers. Final exam. Prereq: Physics 311. Sem hrs: 3 fall.

Physics 391. Optics. 1(1)
Topics in geometrical optics, including properties at light, lenses, mirrors, ray tracing, and optical instruments. Discussion of physical optics includes interference, diffraction, absorption, scattering, polarization, and optical spectra. Selected topics in contemporary optics such as nonlinear optics and holography. Final exam. Prereq: Physics 311. Sem hrs: 3 spring.

Physics 392. Plasma Physics. 1(1)
A comprehensive introduction to the plasma state of matter. Topics include single particle motion, adiabatic invariants, fluid description of a plasma, waves in plasmas, diffusion and resistivity, stability and controlled fusion. Final exam. Prerequisite: Physics 311. Semester hours: 3 spring.

Physics 410. Modern Physics in the Air Force. 1(1)*
Review of the interrelationships among science and engineering core courses emphasizing the unifying role of physics and the conservation laws. Topics include special relativity, quantum mechanics, radioactivity, nuclear physics and their application to current and future Air Force systems. Primarily for Humanities and Social Science majors and those in the Basic Academic Program. Final exam. Prereq: Physics 311; C1C standing or department permission. Sem hrs: 3 fall or spring. NOTE: The honors section of Physics 410 has limited enrollment and is team-taught with English 406HY.

Physics 420. Modern Physics for Science and Engineering. 1(1)*
Review of the interrelationships among science and engineering core courses emphasizes the unifying role of physics and the conservation laws. Topics include special relativity, quantum mechanics, radioactivity, nuclear physics and their application to current and future Air Force systems. Primarily for Basic Sciences and Engineering majors. Final exam. Prereq: Physics 311; C1C standing or department permission. Sem hrs: 3 fall or spring.

Physics 441. Laboratory Techniques. 1(2)
Introduction to laboratory skills and instrumental techniques. Reinforces concepts of physical behavior. Field trip. No final. Prereq: Physics 311. Sem hrs: 3 spring.

Physics 442. Advanced Physics Lab. 1(2)
Selected experiments develop laboratory skills and reinforce the concepts of physical ideas. Field trip. No final. Prereq: Physics 441 and Physics 363; or department permission. Sem hrs: 3 fall.

Physics 453. Solar-Planetary Interactions. 1(1)
Discussion of the basic physical principles controlling the sun's interaction with planetary atmospheres. Topics include the dynamics and structure of the solar atmosphere, sun spots, coronal holes, origin of the solar wind, interaction of the solar wind with planetary magnetospheres, and the effects of this interaction on space vehicles and earth-based systems. Final exam. Prereq: Physics 370 and 392. Sem hrs: 3 fall.

Physics 454. Upper Atmospheric Physics. 1(1)
Examination of the structure and morphology of the earth's upper atmosphere starting at the stratosphere and extending up to the inner magnetosphere. Topics include ozone morphology and distribution, mesopheric structure, ionospheric chemistry and dynamics, aurora borealis, and the effects of ionospheric storms on satellites and ground-based systems. Final exam. Prereq: Physics 370 and Physics 392; or department permission. Sem hrs: 3 spring.

Physics 459. Quantum Mechanics. 1(1)
Postulate basis of quantum mechanics. Solutions of the wave equation, operators, angular momentum, harmonic oscillator, and hydrogen atom. Quantum theory applied to physical problems. Final exam. Prereq: Physics 358 and Physics 364. Sem hrs: 3 fall.

Physics 461. Electromagnetic Theory I. 1(1)
Develops Maxwell's equations and basic principles of electromagnetism. Includes electrostatic fields in both vacuum and in dielectrics, the Laplace and

Poisson equations, magnetic fields associated with constant and time varying currents, and magnetic materials. Final exam. Prereq: Physics 311; Math 330 or Physics 358. Sem hrs: 3 fall.

Physics 462. Electromagnetic Theory II. 1(1)
Applications of Maxwell's equations: plane waves, reflection, refraction, guided waves, electric and magnetic dipoles and quadrupoles, and antennas. Treats the interaction between plane waves and plasmas. Final exam. Prereq: Physics 461 in the preceding semester. Sem hrs: 3 spring.

Physics 480. Astronomical Techniques. 1(1)
Introduction to optical astronomy using the USAFA 24" telescope during 12 night laboratories. Emphasis on equipment operating principles, scientific method, data reduction, and reporting results. Includes astrophotography, photoelectric photometry, and spectroscopy. Final exam. Prereq: Completed or enrolled in Physics 311. Sem hrs: 3 fall or spring.

Physics 486. Astrophysics. 1(1)
Applications of physics to astrophysical problems, including stars, cosmic gas and dust, and the structure of the universe. Discussion of observational basis for theories and their limitations. Final exam. Prereq: Physics 370 and Physics 392; or department permission. Sem hrs: 3 spring.

Physics 495. Special Topics. 1(1)
Selected topics in physics. Final exam or final report. Prereq: Department permission. Sem hrs: 3 with offering time determined by department.

Physics 499. Independent Study. 1(0)
Individual research under the direction of a faculty member. Final report. Prereq: Department permission. Sem hrs: 3 fall or spring.

POLITICAL SCIENCE (Pol Sci)

Offered by the Department of Political Science (DFPS)

Pol Sci 200. Introduction to Political Science. 1/2(1x)
Survey of the evolution of Western political thought explaining the chief contemporary ideologies and forms of government. Examples of the ideologies and governments in the world today. Foundation for subsequent study of American government, international relations, and more specialized topics for political science. Final exam. Sem hrs: 1 1/2 fall or spring. (Not offered second half of spring semester.)

Pol Sci 201. American National Government. 1/2(1x)*
Continuation of Pol Sci 200. Engenders an understanding and appreciation of the political traditions and behavior of Americans and of the structure and function of our national governing institutions. Emphasizes the policy process. Final exam. Prereq: Pol Sci 200. Sem hrs: 1 1/2 fall or spring. (Not offered first half of fall semester.)

Pol Sci 203. The International Political System. 1/2(1x)*
Relations among nations, emphasizing the structure and characteristics of the contemporary international political system. Final exam. Prereq: Pol Sci 201. Sem hrs: 1 1/2 fall or spring. (Not offered second half of fall semester.)

Pol Sci 232. Comparative Politics. 1(1)
Transition from feudalism to capitalism and the emergence of the modern bureaucratic state. Political systems of the United States, Britain, France, Germany, Japan, Soviet Union, China, and other countries. Topics include leadership, organizational and ideological aspects of sociopolitical change and the relative merits of revolutionary violence or reformist, incremental strategies in effecting fundamental transformations of societies. Final exam or research paper. Prereq: Pol Sci 201. Sem hrs: 3 fall.

Pol Sci 349. Political Analysis. 1(1)
Introduction to the methodological foundations of contemporary political science research. Emphasis on current research designs and methods in political science such as quantitative analysis, interviews, survey research, simulation, and forecasting. Final exam or research paper. Prereq: Pol Sci 200; Math 220 or 357; or department permission. Sem hrs: 3 spring.

Pol Sci 352. Political Theory. 1(1)
An overview of political thought from the Ancient Greeks to the present. Basic Western political concerns such as equality, freedom, justice, power, natural rights, the nature of man, and the ideal government are considered in terms of how political theorists have dealt with them and how these issues relate to the present. Final exam or research paper. Prereq: Pol Sci 200. Sem hrs: 3 fall.

Pol Sci 371. American Elections and Political Parties. 1(1)
Examines the nature of the American electoral process and the roles that political parties and interest groups play in that process. Focuses on party functions, ideologies, organization, goals, and finances. Examines the increasing role of interest groups in electoral politics. Special attention to the current Presidential or Congressional election. Research paper. Prereq: Pol Sci 201. Sem hrs: 3 fall of even numbered years.

Pol Sci 383. American Foreign Policy: Process and Issues. 1(1)
Analysis of U.S. foreign policy in the post-1945 period. Examination of the policy-making environment and the roles of the President, the Department of State, the Congress, and various executive departments. Final exam or research paper. Prereq: Pol Sci 203. Sem hrs: 3 fall and spring.

Pol Sci 385. Public Administration. 1(1)
Analyzes the formulation and execution of public policy in America. Includes study of organization theory, administrative process, structure of U.S. federal bureaucracy, decision making theory, and bureaucratic politics. Research paper. No final exam. Prereq: Pol Sci 201. Sem hrs: 3 spring.

Pol Sci 412. Defense Policy. 1(1)*
Relationships among military policy, foreign policy, and national security policy. Formulation of defense policy in terms of external threats, American political climate, and impact of military technology. Institutional machinery for making strategy. Final exam. Prereq: Pol Sci 203 or department permission. Sem hrs. 3 fall or spring. Honors section(s) fall and spring. Honors section offered in summer term concurrent with French 492 for cadets selected for French Exchange Program with research paper in lieu of final exam.

Pol Sci 421. Political Violence and Revolutionary Change. 1(1)
Focuses on the use of organized violence by nongovernmental groups designed to achieve political objectives of various kinds, the social conditions underlying such actions, the factors which account for the success or failure of these efforts, and the resulting effects in a larger socio-political context. Emphasizes revolution and agitational terrorism. Research paper. No final exam. Prereq: Pol Sci 203. Sem hrs: 3 fall.

Pol Sci 422. American Defense Policy: Processes and Issues. 1(1)
Examines relationships among military, foreign, and national security policies. Emphasizes impact of the international environment, perceived threats, domestic constraints, technology, institutional structures, and the policy process on the formulation and implementation of defense strategy. Final exam. Prereq: Pol Sci 383 or department permission. Sem hrs: 3 fall or spring. (Authorized core substitute for Pol Sci 412. Effective spring 1985.)

Pol Sci 441. Senior Seminar in International Relations. 1(1)
Examines contending theories and perspective on world politics. Consideration of issues relevant to foreign policy formulation such as the use of force in power politics, international political economy, international organization, transnational actors, interdependence, and future world order. Research paper. Prereq: C1C standing or department permission. Sem hrs: 3 spring.

Pol Sci 442. Senior Seminar in American Politics and Public Policy. 1(1)
Examines the impact of American political institutions and processes on U.S. policy formulation and implementation. Introduces basic concepts of policy studies and analysis. Research paper. No final exam. Prereq: C1C standing or department permission. Sem hrs: 3 spring.

Pol Sci 460. Comparative Defense Policy. 1(1)
A comparative study of selected defense policies and policy making processes of the Soviet Union, China, Japan, and selected European and Third World states. Case studies examine variations in doctrine, weapons acquisition, and force deployment and use. Research paper. No final exam. Prereq: Pol Sci 203. Sem hrs: 3 spring.

Pol Sci 472. Politics of the USSR. 1(1)
Studies the communist system of government emphasizing both the internal political processes and external relations of the USSR. Analyzes the effects of ideology, national interest, internal forces and foreign relations. Examines Soviet foreign policy since 1945. Final exam. Prereq: Pol Sci 203. Sem hrs: 3 spring.

Pol Sci 473. Politics of Asia. 1(1)
Surveys government and politics of selected countries in East Asia with emphasis on China and Japan. Includes examination of China's expanding power and influence, implications of a resurgent Japan and other current Asian issues. Final exam. Prereq: Pol Sci 203. Sem hrs: 3 fall of odd-numbered years.

Pol Sci 474. Politics of Western Europe. 1(1)
Political developments in Western Europe from the Marshall Plan to the present. Examines institutional arrangements and political strategies of major Western European states. Considers potential of a united Europe. Final exam. Prereq: Pol Sci 203. Sem hrs: 3 spring.

Pol Sci 476. Politics of Latin America. 1(1)
Comparative study of selected Latin American political systems. Examines issue of political stability in Latin America; the interrelationship of economic, military, political, and social factors in the growth of Latin American political systems; and intra-hemisphere relations. Final exam. Prereq: Pol Sci 203. Sem hrs: 3 spring.

Pol Sci 478. Politics of the Middle East and North Africa. 1(1)
Analysis of the major political trends within the Middle East and North Africa. Surveys the colonial epoch, independence era, contemporary political systems, and major issues. Research paper. No final exam. Prereq: Pol Sci 203. Sem hrs: 3 spring.

Pol Sci 479. Politics of Africa. 1(1)
Analysis of major political trends in sub-Saharan Africa. Surveys the colonial epoch, independence

era, contemporary political systems, and major issues/conflicts surveyed. Research paper. No final exam. Prereq: Pol Sci 203. Sem hrs: 3 fall of even-numbered years.

Pol Sci 482. The U.S. Congress. 1(1)
Studies Congress as a political institution. Topics include elections, member-constituent relations, national policy roles, leadership, the committee system, seniority, legislative procedures, legislative oversight of administrative agencies, and the role of political parties. Final exam. Prereq: Pol Sci 201. Sem hrs: 3 fall.

Pol Sci 484. The American Presidency. 1(1)
An in-depth study of the Presidency with emphasis on the post-World War II period. Examines the presidential selection process and the office and powers of the President as well as presidential administrative structures, styles, roles, and personalities. Research paper. No final exam. Prereq: Pol Sci 201. Sem hrs: 3 spring.

Pol Sci 485. Politics and Intelligence. 1(1)
Explores the structure of the U.S. intelligence community, and its relationship to the political and bureaucratic processes that drive it. Current issues of interest and case studies in intelligence. Research paper. No final exam. Prereq: Pol Sci 203. Sem hrs: 3 fall of odd-numbered years.

Pol Sci 495. Seminar in Political Science. 1(1)
Selected topics in political science. One field trip per semester when appropriate local destinations available. Final exam or final report. Prereq: Department permission. Sem hrs: 3 fall or spring.

Pol Sci 499. Independent Study. 1(0)
Individual study or research in a carefully selected topic conducted on a tutorial basis. Research paper or directed reading. Prereq: Department permission. Sem hrs: 3 fall or spring.

PROFESSIONAL MILITARY STUDIES (PMS)

Offered by the Deputy Commandant for Military Instruction (CWI)

PMS 110. Professional Foundations. 0(1)
Studies the mission, organization and operation of the U.S. military. Introduction to the military ethic and to the professionalism necessary to build a foundation for a career as an Air Force officer. Emphasizes the application of airpower, operation of the DOD and the Air Force's role in support of national objectives. Addresses the responsibilities of officers in accomplishing these goals. Provides a background essential for increased cadet responsibilities and later a military career. Final exam. Sem hrs: 2 fall or spring.

PMS 225. Airpower Doctrine and Employment. 0(1)
Studies basic airpower doctrine as it relates to the employment of airpower. Examines force multipliers such as Command, Control, Communications, and Intelligence; electronic combat, and Command, Control, Communications, and Countermeasures, as well as basic doctrine and organization of airpower. Case studies and application exercises illustrate principles of commanding air combat. Prereq: PMS 110 and C3C standing. Final exam. Sem hrs: 2 fall or spring.

PMS 330. United States Force Employment Concepts. 0(1)
Examines U.S. military doctrine and employment concepts. Relates basic doctrine to current force structure and employment concepts, then analyze selected tactical force employment issues through an exercise. Final exam. Prereq: PMS 225 and C2C standing. Sem hrs: 2 fall or spring.

PMS 440. Military Theory and Force Analysis. 0(1)
Foundation in professional military thought. Studies the writings of significant military theorists and evaluates national military forces. Emphasizes Soviet military doctrine and force structure. Provides analytical techniques applicable to the study of military power in general. Final exam. Final report. Prereq: PMS 330. Sem hrs: 3 fall or spring.

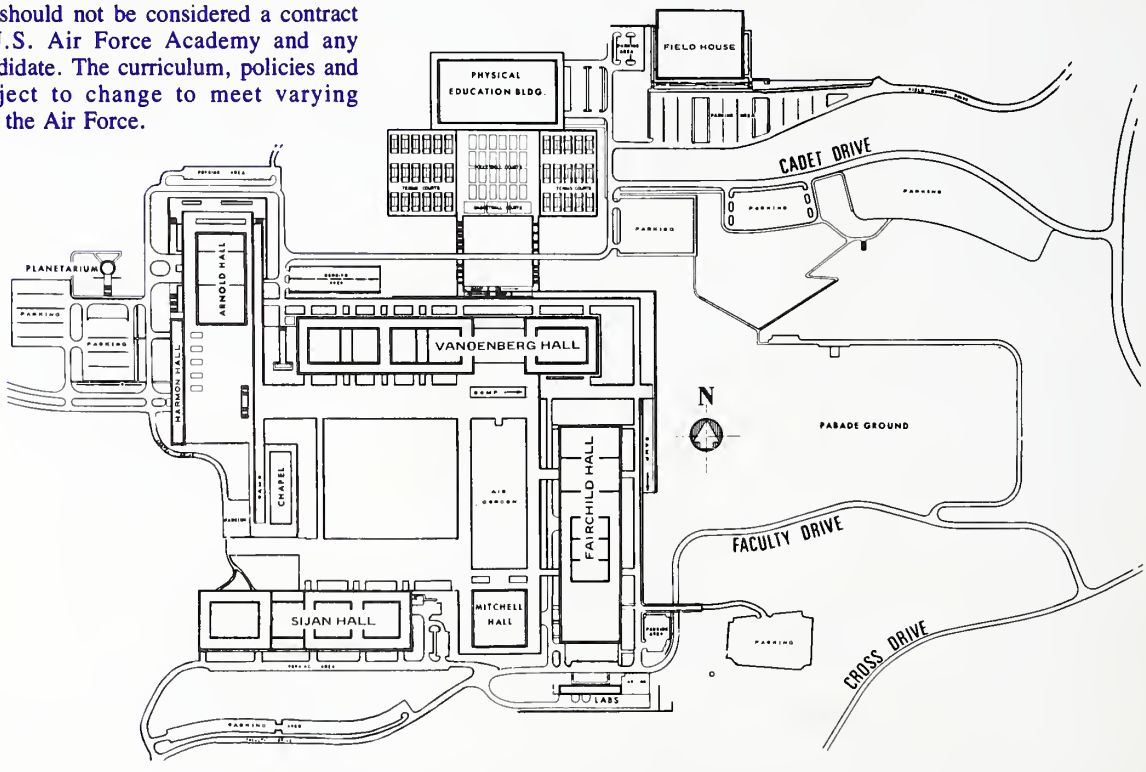
PMS 495. Special Topics. 0(1)
Selected topics pertaining to the military. No final. Prereq: Department permission. Sem hrs: 3 fall or spring.

PMS 499. Independent Study. 0(0)
Individual study and/or research under the direction of a Professional Military Studies instructor. No final. Prereq: Department permission. Sem hrs: 3 fall.

SOCIAL SCIENCES (Soc Sci)

Soc Sci 400H. Social Sciences Honors Seminar. 1(2)
Interdisciplinary course. Treats the social world of senior decision makers. Applies leading analytical paradigms of the contributing social scientific discipline. Examines and generates alternative futures. Emphasizess defense-related considerations. Final project. Prereq: Firstclass Honors Degree candidate or permission of the Division Chairman. Sem hrs: 3 fall or spring.

This catalog should not be considered a contract between the U.S. Air Force Academy and any prospective candidate. The curriculum, policies and dates are subject to change to meet varying requirements of the Air Force.



UNITED STATES AIR FORCE ACADEMY CADET AREA

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FACILITIES

Majestic mountains with renowned Pikes Peak in the distance dominate the western side of the Academy site with sweeping plains to the east. Spectacular scenes of nature frame the modern campus. The cadet area, the main complex of the Academy, is on the mesa at the north end of the site. The contemporary buildings feature glass, aluminum, steel and white marble. Many of the buildings are named for famous Air Force leaders as well as significant figures in the Academy's history.

The 18,000-acre site allows space for the many aviation training programs the Academy offers as well as for further expansion of the facilities to accommodate additional students.

THE CADET CHAPEL, focal point of the cadet area, is striking in its design with 17 towering spires which admit light to the Protestant chapel through colorful stained glass. Catholic and Jewish chapels and an all-faith worship room are located on the lower-floor level.

SIJAN HALL, an 830-room dorm, was named for the late Captain Lance P. Sijan, Class of 1965, the Academy's first Medal of Honor winner. The cadet dental clinic and tailor shop are located in the dorm.

MITCHELL HALL, the cadet dining hall, accommodates all cadets at one sitting for meals. It was named for General Billy Mitchell, pioneer of military aviation.

THE AERONAUTICS AND ELECTRONICS LABORATORIES AND OBSERVATORY are located near the academic area.

FAIRCHILD HALL, the cadet academic building, contains academic facilities as well as a cadet dispensary and the Academy Library. It was named for General Muir S. Fairchild, pioneer of Air Force education.

VANDENBERG HALL, a cadet dormitory, has 1,320 rooms, squadron areas, hobby shops, chaplains' offices, counseling offices and a cadet store. It was named in honor of General Hoyt S. Vandenberg, former Chief of Staff of the Air Force.

THE CADET GYMNASIUM contains two swimming pools (one Olympic size) and many athletic courts and areas used for physical education classes and intramural and intercollegiate sports.

THE FIELD HOUSE sports arena includes a multi-purpose area utilized for indoor track meets, other sports practices and physical education classes; a 6,600 seat basketball court; and a 3,100 seat hockey arena.

ARNOLD HALL, the cadet social center, includes a ballroom, auditorium, bowling center, recreation rooms, lounges, snack bars, information, ticket and tour office, and a cadet graphics shop. It was named in honor of General Henry H. "Hap" Arnold, World War II Air Force leader.

THE PLANETARIUM, containing a modern projector system, is used for cadet instruction and public showings.

HARMON HALL, the administration building, houses the offices of the Superintendent and his staff. It was named for Lt General Hubert R. Harmon, first Superintendent of the Academy.

Also on the Academy site are: the Academy Hospital, the Officers' and Noncommissioned Officers' Clubs, Visiting Officers' Quarters, two family housing areas with public schools, a community shopping center, the Academy Preparatory School, a supply and services area, a 3,500 foot airstrip, and a 2,100 foot glider strip.

The Falcon Football Stadium and Eisenhower Golf Course are also included among the Academy's facilities. In the nearby mountains of the Rampart Range, Farish Memorial is a recreational area set aside for cadets and Academy personnel.

Jack's Valley, the primary cadet training area on the Academy grounds, provides field conditions for basic cadet training.

C REQUEST FOR AIR FORCE ACADEMY PRECANDIDATE QUESTIONNAIRE

(Submit only once. Deadline is 31 January of entering year.)

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The Air Force Academy needs this personal data to provide you information about the Air Force Academy. The data will be used for Air Force officer commissioning programs *(Authority 10 USC 9331 and E.O. 9397)*. Disclosure is voluntary. However, without submission of all the requested information, eligibility for selection can not be made. SSN is used as a means of identification.

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NAME *(Last, First, Middle)*	
NUMBER AND STREET	
CITY / STATE / ZIP CODE	
HOME TELEPHONE NUMBER *(Include Area Code)* / DATE OF BIRTH *(Month, Day, and Year)*	

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1. **CADET CHAPEL**
2. **SIJAN HALL** (Cadet Dormitory)
3. **MITCHELL HALL** (Cadet Dining Hall)
4. **AERONAUTICS & ELECTRONICS LABORATORIES, OBSERVATORY**
5. **FAIRCHILD HALL** (Academic Building)
6. **VANDENBERG HALL** (Cadet Dormitory)
7. **FIELD HOUSE**
8. **GYMNASIUM**
9. **ARNOLD HALL** (Cadet Social Center)
10. **PLANETARIUM**
11. **HARMON HALL** (Administration Building)

The catalog should be used by high school students, counselors, and other interested persons who are seeking detailed information about the Air Force Academy, the curriculum and faculty. Air Force Admissions Liaison Officers (LOs) will receive copies of the catalog. They should provide copies to high school counseling offices.

To obtain Academy literature appropriate to your needs, write to the Academy and state the information desired. If you are a student, include your age, social security number, and grade in school.

Send your request to the Admissions Office at: HQ USAFA/RRS, USAF Academy, Colorado Springs, CO 80840-5651

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